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SERIES 21. NO. 1

August, 1917

BULLETIN
OF THE
Lowell Textile School
LOWELL, MASS.

Issued Quarterly

1917 - 1918

Entered August 26, 1902, at Lowell, Mass., as second class matter,
under Act of Congress of July 16, 1894.

7412

Moody Street and Colonial Avenue

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(Incorporated 1895)

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For term ending June 30, 1920: Arthur J. Hennigan, class of 1906, Boston Representative for Cox & Schrieber, Commission Merchants of New York City.

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Evening Instructor in Freehand Drawing
- GEORGE GOODCHILD,
Evening Instructor in Cotton Yarns
- EDITH C. MERCHANT,
Evening Instructor in Freehand Drawing
- ARCHIBALD R. GARDNER, M. D.,
Medical Adviser

EVENING CLASSES

COURSES

The evening classes offer to those who are employed during the day, instruction pertaining to their daily work or instruction in such branches as are related to the particular department in which they are engaged. Thus, one who is a weaver can carry on a course in Spinning or Designing. A dyer or an employee in a dye house can by means of a course in Chemistry and Dyeing acquire a better and more accurate knowledge of the chemicals and materials he is handling during the day. A machinist working on a lathe, planer, milling machine or at a bench, may add to his accomplishments, a knowledge of drafting, mechanism, and other subjects. This means that any man, young or old, who has the fundamentals of common school education, and who has the determination to advance, may secure in proper sequence the stepping stones to the place toward which he is looking, and rise to even the highest positions in the industry.

The courses of the evening school are varied and arranged to meet the special needs of those engaged in the industry. They vary in length from one year to three and at the completion of each course, the certificate of the school is awarded, providing, however, that the student has been in attendance in the course during the year for which the certificate is granted.

The evening classes commence the second Monday of October and continue for twenty weeks. The school is open on four evenings each week during the period mentioned except when the school is closed for holiday recesses.

Courses are offered in:

- I. (a) Cotton Spinning—2 and 3 years.
(b) Knitting—1 year.
- II. (a) Woolen Spinning—2 years.
(b) Worsted Spinning—3 years.
- III. (a) Textile Design—3 years.
(b) Freehand Drawing—3 years.

IV. Chemistry and Dyeing.

- (a) Elementary Chemistry—2 years.
General Chemistry including Inorganic and Organic.
Qualitative Analysis.
- (b) Textile Chemistry and Dyeing—3 years.
Lectures in Textile Chemistry and Dyeing.
Laboratory Work in Dyeing.
- (c) Analytical Chemistry—3 years.
Laboratory Work and Lectures in Quantitative Analysis.
- (d) Textile and Analytical Chemistry—4 years.
Lectures in Textile Chemistry and Dyeing.
Laboratory Work in Analytical Chemistry.

In order to take Course (b), (c), (d), candidates must have certificate from Course (a), or show by examination or approved credentials that they have taken the equivalent work covered by this course.

- V. (a) Cotton Weaving—1 year.
- (b) Woolen and Worsted Weaving—1 year.
- (c) Dobby and Jacquard Weaving—1 year.

VI. Elements of Engineering—3 years.

Mechanics.

Steam.

Electricity.

Machine Shop—2 years.

Mechanical Drawing—3 years.

- VII. (a) Cotton Finishing—1 year.
- (b) Woolen and Worsted Finishing—1 year.

Entrance Requirements.

All applicants to the evening classes must understand the English language and simple Arithmetic. Those who are graduates of a grammar or high school are admitted upon certificate. Those who cannot present such a certificate are required to take examinations in the subjects of English and Arithmetic. In the examination in English a short composition must be written on a

given theme, and a certain amount must be written from dictation. In the examination in Arithmetic the applicant must show suitable proficiency in addition, subtraction, multiplication, division, common and decimal fractions, percentage, ratio and proportion. Opportunity to register or to take these examinations is offered each year, generally on the Thursday evenings of the two weeks previous to the opening of the evening school.

Registration.

Before entering the class a student must fill out an attendance card which can be obtained at the office or from the instructors in the various departments.

Any student who has filed an attendance card and who wishes to change his course must notify the office before making the change.

Fees and Deposits.

All evening courses are free to residents of Lowell. To those outside of Lowell the fee is \$10.00 per year for *each course of two nights per week*. Students taking two courses or attending courses requiring more than two nights per week are required to pay \$15.00 per year for three nights and \$20.00 for four nights.

All fees and deposits must be paid in advance.

All students, whether from Lowell or not, taking course (a) Chemistry and Dyeing Department, are required to make a deposit of \$5.00 at the commencement of the course. A deposit of \$10.00 will be required of all students taking course (b), (c) or (d). This is to cover the cost of laboratory breakages, chemicals, apparatus, etc., and at the end of the year any unexpended balance is returned or an extra charge made for the excess breakage.

Every student who takes the Chemistry and Dyeing Course must check up his desk with the instructor of that department when he leaves the school. Any student not doing so will be charged 50 cents.

Transportation.

Free transportation is given students from Lawrence. A transportation blank can be obtained from the office and must be

properly filled out by applicant and signed by the Superintendent or Overseer of the department in which said applicant is employed. This blank must then be handed in to the office together with the tuition fee before trip ticket will be given student.

Any student who leaves school before the end of the term should return his trip ticket immediately upon leaving.

Supplies.

Students must provide their own books, stationery, tools, etc., and pay for any breakage or damage that they cause.

Student's supplies will be sold from the Store Room every evening school night from 7.00 to 7.45 p. m.

1. Cotton Spinning—2 Years

In this course the cotton is taken as it is raised in various parts of the world, and instruction is given in the various processes on all the machines from the gin to the spinning frame and mule. For one who desires only a study of combing, carding or spinning, it is possible to take that part of the course in which he is particularly interested, although it is believed to be better for a spinner to know something about the machines and processes that precede his own. If one, all his life, has worked with one grade of cotton, an understanding of the other types and grades of cotton, of their properties, methods of cultivation, localities where grown, and uses to which they are adapted, cannot but help to broaden his intellect and make him a more valuable man.

A detailed study of the machines including speeds, drafts, and settings, explains and makes clear to the student the arbitrary orders of the mill overseer. There is not time in the mill for explanations as to why a certain change gear is used or how the draft constant is determined. The relative advantages of the many types of mechanisms are considered.

IIa. Woolen Spinning—2 Years

IIb. Worsted Spinning—3 Years

In both courses the students of the first year pursue the same class work covering instruction in the many kinds of wool, the varying properties of the fibres, trade terms, sorting, scour-

ing, carbonizing, etc. This work is followed by instruction in carding and mule spinning for the woolen students. For those desiring to study worsted yarn manufacture work is taken up on the worsted card, followed by gilling and combining and processes of top making. The last year of this course is devoted to a study of worsted yarn manufacture on both the English and French systems.

Thus in three years' time one may acquire a thorough course of instruction in worsted yarn manufacturing, or in two years, a knowledge of woolen yarn manufacture. He is thus able to obtain a knowledge of machines and processes that could not be obtained in the ordinary course of events in the mill.

IIIa. Textile Design—3 Years

For one who is working in the design, pattern or weave room, the course in design offers instruction in the great variety of weaves, in cloth construction and analysis. It is practically impossible under ordinary circumstances for one to acquire in the mill a knowledge of the construction of the many textile fabrics. Where a person spends the greater portion of his life in one or two mills, his knowledge of fabrics is confined to those made in the mills in which he works. A course in designing supplements the experience received during the day, thus broadening a person's textile knowledge as well as making him better acquainted with the fabrics upon which he works daily.

IIIb. Freehand Drawing—3 Years

In the course in Freehand Drawing, instruction is given in the drawing from models, casts and designs. Work is taken up in charcoal and also in colors. This course has appealed to many young women of the city and it is believed that this is a most fortunate opportunity for both young women and young men of Lowell to acquire the elements of artistic designing.

IVa. Elementary Chemistry—2 years

General Chemistry including Inorganic and Organic.
Qualitative Analysis.

IVb. Textile Chemistry and Dyeing—3 Years

Lectures in Textile Chemistry and Dyeing.
Laboratory Work in Dyeing.

IVc. Analytical Chemistry—3 Years

Laboratory Work and Lectures in Qualitative
Analysis.

IVd. Textile and Analytical Chemistry—4 Years

Lectures in Textile Chemistry and Dyeing.
Laboratory Work in Analytical Chemistry.

Hardly any branch of applied science plays so important a part in our industrial world as Chemistry. Many large mills employ the chemist as well as the dyer, and with the great progress which is being made in the manufacture and application of dyestuffs, a basic knowledge of chemistry becomes an absolute necessity to the dyer. Within a comparatively short distance from Lowell are establishments employing men who require some knowledge of chemistry but who may not necessarily use dyes. Some find a knowledge of analytical chemistry helpful in their everyday work.

To meet these varying needs of our industrial community, the school offers a two year course in General Chemistry, Organic and Inorganic, which may be followed by any one of three courses, viz., Textile Chemistry and Dyeing, Analytical Chemistry and Textile and Analytical Chemistry. In order to take Courses IVb, IVc or IVd, candidates must have a certificate from Course IVa, or show by examination or approved credentials that they have taken the equivalent of the work covered by this course.

Va. Cotton Weaving—1 year

Vb. Woolen and Worsted Weaving—1 year

Vc. Dobby and Jacquard Weaving—1 year

These are called weaving courses, but in reality they might more properly be called courses in loom fixing for particular attention is given to the mechanism of the looms, the timing of

the various parts and the adjustments possible to produce desired results. Here again, is an opportunity for students to fix, dismantle, erect and adjust looms in a way that could not be tolerated in any mill. Frequently students come to the classes with the knowledge that certain adjustments must be made upon a loom if certain results are to be obtained, but the reason for these is not known. The school offers the machine, time and instructor in order that the weaver, or loomfixer, may determine for himself the reason for some rule which he practices in his daily work. Not only can he become more familiar with the loom upon which he works every day, but he can study the operations of many other makes of looms.

Vla Elements of Engineering—3 years

Vlb. Mechanical Drawing—3 years

Vld. Machine Shop Practice—2 years

These courses have been arranged with the object of offering to those engaged in the mechanical and electrical departments of our mills, opportunities to learn something concerning the theory underlying the many practical methods which they pursue during the day.

Under the head of Elements of Engineering is given instruction in Mechanics and Mechanism of machines for one year, followed by a year's course on steam boilers and engines with the auxiliary apparatus found in a modern steam plant. In the third year a brief course in Applied Electricity takes up, as far as the time will permit, instruction in alternating and direct current generators, motors and apparatus.

For one having occasion to make a sketch or detail drawing for the purposes of illustration or instruction, or for one who is daily required to work from a drawing or blue print, the course in Mechanical Drawing is offered. It first lays a foundation of the principles of mechanical drawing and follows this with two years' work in drawing directly from parts of machines, preparing both the detail and the assembly drawing.

The Machine Shop Course is almost self-explanatory. The school has one of the best equipped shops for instruction purposes in this vicinity. Nearly all of the standard machine tools are

represented, and it is possible to do almost any kind of machine tool work which comes within the range of the tools.

Thus it becomes possible for one who may be working at the bench during the day to learn how to operate a lathe or other tool, or for a lathe hand to acquire a knowledge of a planer, shaper, milling machine, grinder, etc. A man who has a knowledge only of the special machine which he operates, may by means of this course, become a more intelligent machinist. He should supplement this course with the courses in Mechanical Drawing and Mechanism in order that his training for an all-round machinist or mechanic may be more complete.

VIIa. Cotton Finishing—1 year

VIIb. Woolen and Worsted Finishing—1 year

In these courses machine work is supplemented by lectures and discussions pertaining to the many finishes given to fabrics. The action of soaps, water, steam, heat and cold upon cloth containing one fibre or combinations of fibres as used in commercial fabrics is carefully studied. These courses also help the finisher to broaden his knowledge of textile fabrics.

OLNEY CHEMICAL ALUMNI OF THE LOWELL TEXTILE SCHOOL

This association was organized in 1898, for the purpose of keeping its members in closer relationship with each other and the school.

The membership consists of evening graduates from any of the advanced courses in chemistry and dyeing of the Lowell Textile School, and is composed of thirty members at present.

The annual meeting is held during the winter months and the annual reunion is held the third Saturday of June at a place selected by the Board of Control.

Officers

President: Samuel J. Nichol, Lowell, Mass.

Vice-President: James H. Spurr, Jr., Lawrence, Mass.

Secretary and Treasurer: Alexander T. Herron, Lawrence, Mass.

Board of Control

Harry Buckley, Methuen, Mass.	4 years
James W. Myers, Lowell, Mass.	3 years
Samuel Stott, Methuen, Mass.	2 years
John Nicoll, Andover, Mass.	1 year

This association will offer each year a book prize to the evening graduate who attains the highest standing in any one of the advanced courses of the Chemistry and Dyeing Department.

For information regarding this association please apply to Alexander T. Herron, 55 Bodwell St., Lawrence, Mass.

The winner of this prize for 1917 was Lewis N. Mears, Ballardvale, Mass.

EVENING CLASS OF 1917

Certificates awarded as follows, April 11, 1917:

COURSE Ia—2 YEARS. (Cotton Spinning)

Ariston Kimball Barrows	Lowell, Mass.
Carl Sumner Fleming	" "
Robert Frederick Herrick, Jr.	" "
Thomas Kevin Kearney	" "
Robert Herman Kiessling	Roslindale, "
Frederick William Leaver	Methuen, "
William Thomas Mathews	Lowell, "
Elmer William Moffatt	" "
Frank Malackie Paul	" "
Robert John Rutledge	" "
William Shaw	" "
Harry Lawrance Wheeler	" "
Percy Ernest Yeates	Boston, "

COURSE Ia—3 YEARS. (Cotton Spinning)

Harry James Hayward.	Lawrence, Mass.
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COURSE Ib—1 YEAR. (Knitting)

Walter Gamage Kitchen	Lowell, Mass.
Louis Joseph Parent	" "

COURSE IIb—3 YEARS. (Worsted Spinning)

William Francis Brandy	Lawrence, Mass.
Frederic Stacey Gilley	Somerville, "
Percy Whiteoak	Lowell, "

COURSE IIIa—3 YEARS. (Textile Design)

John Thomas Bamford	Lawrence, Mass.
Julvin Joseph Coolens	Lowell, "
William Howard Hall, Jr.	" "
George Edward Hibbert	" "
John Howker	" "
James Archibald MacGeoch	Lawrence, "
Richard Clarence O'Brien	Roxbury, "
William Lorenzo Wilkinson	North Andover, "
George Henry Wilton	" " "

COURSE IIIb—3 YEARS. (Freehand Drawing)

Alma Marion Barry	Lowell, Mass.
Alice May McNabb	" "
Mary Antoinette Naud	" "
Taxiarchis Zissis Protopapas	" "

COURSE IVa—2 YEARS. (Elementary Chemistry)

Walter Francis Dawson	Lowell, Mass.
Henry Dustin Grimes	Lawrence, "
Archibald Kerr Innes	" "
Frank John Kannheiser	" "
Leo Joseph Kennedy	Lowell, "
Raymond Joseph Kenney	" "
George Joseph Loupret	" "
Thomas Russell McDermott	" "
William John Magee	Lawrence, "
Charles Leslie Parker	" "
George Ernest Parkhurst	" "
Frederic Archibald Prisley	" "
Arthur Clifford Slater	North Andover, "
Joseph Talbot	Lawrence, "
Carl Toepler	" "
Joseph Arthur Tremblay	Lowell, "

COURSE IVb—3 YEARS. (Textile Chemistry and Dyeing)

William John Allen	Lawrence, Mass.
Reginald Crabtree Atkinson	Lowell, "
William Francis Brandy	Lawrence, "
Alexander Thomas Herron	" "
Lewis Nathan Mears	Ballardvale, "

COURSE Va—1 YEAR. (Cotton Weaving)

Leon Guileaum Coolens	Lowell, Mass.
Raymond Francis Corkery	" "
Alderie Wilfrid Fortier	" "
James Clarence Funnell	" "
Robert John Rutledge	" "
Edward Benedict Sullivan	" "
Arthur Prescott Whittier	" "
Roger Winship	" "

COURSE Vb—1 YEAR. (Woolen and Worsted Weaving)

Charles Martin Axon	Andover, Mass.
Fredrick Charles Bohne	Methuen, "
Arthur Deleu	Lawrence, "
George John Drescher	" "
Raymond Charles French	" "
Leo Alfons Lutz	" "
Paul Peter Lutz	" "
James Joseph McCann	" "
Ernest Gunnar Noring	" "
Louis Adam Pekarski	" "
Walter Ernest Todd	Lowell, "

COURSE VIa—3 YEARS. (Elements of Engineering)

Wilfred Bottomley	Lawrence, Mass.
Raymond Stoddard Cheney	Methuen, "
Edward Francis Durgin	Lawrence, "
George Felix Langevin	Lowell, "

May Ella Patricia Lowncy	Lowell, Mass.
Alwin Lutz	Lawrence, "
Theodore Edwin Meinelt	" "
Samuel Stevens Sawyer	Lowell, "
Thomas Chester Thyng	Lawrence, "

COURSE VIb—3 YEARS. (Mechanical Drawing)

John DeSpencer	Lawrence, Mass.
Andre Joseph LaVigne	Lowell, "
William Charles Ready	" "
Kenneth Bryant Roberts	" "
Hughey Bernard Schultz	Lawrence, "
Raymond Carl Schwarzenberg	" "

COURSE VIc—2 YEARS. (Machine Shop Practice)

Gilbert Roscoe Merrill	Lowell, Mass.
Alphonse Wilfrid Morin	" "
Mansfred Monson Pihl	" "
Joseph Smith	" "

COURSE VII—1 YEAR. (Woolen and Worsted Finishing)

Guy Eugene Branch	Lawrence, Mass.
William Bruce	North Andover, Mass.
Arthur Dean	Lowell, "
Carl Calman Fritz	Lawrence, "
Frederick Thomas Langford	Methuen, "
Berry Laycock	Lowell, "
Francis John McGill	" "
Richard Clarence O'Brien	Roxbury, "
Francis Joseph Perron	North Andover, "
Raymond Hector Schuster	Lowell, "
Lloyd Kenison Sharples	Haverhill, "
Miles Henry Smith	Lawrence, "
Adolph Julius Winkler	Lowell, "

Schedule of Evening Classes 1917-1918

	Monday	Tuesday	Thursday	Friday
COTTON SPINNING				
First year	Mr. Playdon			Mr. Playdon
Second year	Mr. Goodchild		Mr. Goodchild	
Third year		Mr. Smith	Mr. Smith	
KNITTING		Mr. Smith	Mr. Smith	
WOOLEN SPINNING				
First year		Mr. Barker	Mr. Barker	
Second year	Mr. Barker	Mr. Howker	Mr. Howker	Mr. Barker
WORSTED SPINNING				
First year		Mr. Barker	Mr. Barker	
Second year	Mr. Barker	Mr. Howker	Mr. Howker	Mr. Barker
Third year	Mr. Lowe	Mr. Lowe	Mr. Lowe	Mr. Lowe
TEXTILE DESIGN- ING				
First year	Mr. Bachmann			Mr. Mackay
Second year		Mr. Bachmann	Mr. Mackay	
Third year		Mr. Mackay	Mr. Bachmann	
FREEHAND DRAW- ING				
First year	Miss Whitney		Miss Whitney	
Second year	Miss Merchant	Miss Whitney	Miss Merchant	Miss Whitney
Third year		Miss Merchant		Miss Merchant
ELEMENTARY CHEMISTRY				
First year		Dr. Smith	Dr. Smith	
Second year	Mr. Stoddard		Mr. Stoddard	Mr. Stoddard
TEXTILE CHEMIS- TRY AND DYEING				
First year	Prof. Olney	Mr. Sleeper	Mr. Sleeper	Mr. Sleeper
Second year	Prof. Olney	Mr. Sleeper	Mr. Sleeper	Mr. Sleeper
Third year	Mr. Sleeper	Mr. Sleeper	Prof. Olney	Mr. Sleeper
ANALYTICAL CHEMISTRY				
First year	Mr. Stoddard	Mr. Brann	Mr. Brann	Mr. Stoddard
Second year	Mr. Stoddard	Mr. Brann	Mr. Brann	Mr. Stoddard
Third year	Mr. Stoddard	Mr. Brann	Mr. Brann	Mr. Stoddard

Schedule of Evening Classes 1917-1918

	Monday	Tuesday	Thursday	Friday
TEXTILE AND ANALYTICAL CHEM.				
First year	Prof. Olney	Mr. Brann		Mr. Stoddard
Second year	Prof. Olney	Mr. Brann		Mr. Stoddard
Third year	Mr. Sleeper	Mr. Sleeper	Prof. Olney Mr. Sleeper	Mr. Sleeper
Fourth year	Mr. Stoddard	Mr. Brann		Mr. Stoddard
COTTON WEAVING		Mr. Hoellrich		Mr. Hoellrich
WOOLEN & WORSTED WEAVING	Mr. Younger		Mr. Younger	
DOBBY & JACQUARD WEAVING	Mr. Hoellrich		Mr. Hoellrich	
MECHANICS	Mr. Ball		Mr. Ball	
STEAM ENGINEERING		Mr. Perkins		Mr. Perkins
ELECTRICAL ENGINEERING		Mr. Lupien		Mr. Lupien
MECHANICAL DRAWING				
First year		Mr. Lindsley	Mr. Lindsley	
Second year	Mr. Lindsley			Mr. Lindsley
Third year	Mr. Lindsley			Mr. Lindsley
MACHINE SHOP PRACTICE				
First year			Mr. Jack	Mr. Jack
Second year	Mr. Jack	Mr. Jack		
WOOLEN & WORSTED FINISHING	Mr. Stewart		Mr. Stewart	
COTTON FINISHING		Mr. Glen		Mr. Glen

Address of President Alexander G. Cumnock

DAY GRADUATION, JUNE, 1917

At the last graduation exercises I spoke of the School situation—its buildings and equipment. I now call your attention to the grounds in front and rear of the school. The grounds and fences have been laid out with great care and show the artistic taste of Mr. James T. Smith, who has them in charge.

The Commonwealth of Massachusetts has granted us \$15,825 to put an additional story on Kitson Hall. This will greatly improve the western front. This addition will give us room much needed to enlarge our drafting and knitting departments.

The past year has been the most prosperous year in our history. The Trustees wish me to express their thanks to the Principal and Faculty for their faithful work during the year that is past.

At the graduation exercises one year ago there was a lady present and in her letter to me later on she writes—"I listened to your remarks with great interest." She goes on to say—"I am the mother of two sons. Their father has passed on to the better land, and I am most anxious for their future welfare. One of them has passed through college, and the other is preparing for just what he does not know." Also a letter from a father who is anxious about the future of his son, and he asks me about the same questions. Both the parties write me—"We have read your catalogue but it does not quite clear the way. Would you not do us the kindness to tell us in detail just what is expected of our boys after they enter your school? We hear that there is a large field in the mercantile world for your graduates at good salaries, whereas we find it difficult to place our boys after they leave college."

These two letters impressed me so much that in a brief way I will try and give them an answer. I am indebted to the Principal and Faculty for some of the data.

It is fair to presume that all in this audience are familiar to some extent with this institution. Very likely there are some who know more about one department, or particular phase of the work, because there has been brought into their home an intimate acquaintance with the school life at the Lowell Textile School. However, it may not be out of place at this time to make a general survey and to consider in some detail the educational system operative here.

As all know, the object of the school is to prepare men for the textile industry. To this end two schools were established, viz.—the day school and the evening school; the former for those who are about to devote the daytime for study, the latter for those who are engaged in the mills and shops and who have the ambition and ability to pursue their studies in the evening.

This afternoon we are particularly interested in the day school. Five regular courses of instruction are offered, three that are three years in duration and two that are four years. At the completion of any one of the three year courses, which are called Cotton Manufacturing, Wool Manufacturing and Textile Designing, a student receives the diploma of the school. When a student completes the four year course of Chemistry and Textile Coloring, the degree of Bachelor of Textile Chemistry is conferred upon him, likewise the degree of Bachelor of Textile Engineering is conferred upon the graduate from the Textile Engineering course. The character of the instruction is such that it readily divides itself into seven departments, each of which is in charge of a Head Instructor and one or more assistants. These departments are known as:—

- The Cotton Yarn Department
- The Woolen and Worsted Yarn Department
- The Design and Power Weaving Department
- The Chemistry and Dyeing Department
- The Engineering Department
- The Finishing Department
- The Language and History Department

THE COTTON YARN DEPARTMENT

Instruction in the art of cotton yarn manufacture, which forms an important part of the three year course in Cotton Manufacturing, as well as the courses in Textile Engineering, may be grouped under three heads.

First, as is natural, comes a study of the raw material and this work includes the classifying and grading of the important cottons of the world including Sea Island—Egyptian—Peeler—rough Peruvian and China, as well as many different lots of Upland and Texas cotton.

Secondly, is the study of the operations and machines used in the manufacture of cotton yarn. This includes the processes used in the manufacture of the ordinary carded yarns, the more elaborate and expensive operations used in the manufacture of combed and mule spun yarns, as well as the newest methods of utilizing cotton waste and the very low grades of cotton. This study includes lectures, recitations and laboratory work which consists not only of the production of cotton yarn, but the assembly and adjustment of machines as well.

The third division consists of a series of manufacturing problems and tests calculated to illustrate many of the difficult problems that continually confront the cotton manufacturer.

This work taken up chiefly during the last years of the course is designed to arouse the interest of the student in the great problems of the industry that are peculiarly of a textile nature.

The course in knitting which is carried on is similarly arranged to give the student a knowledge of the production of the various knitted fabrics.

THE WOOL DEPARTMENT

The Wool Manufacturing Course has been developed to give theoretical and practical instruction in the manufacture of wool and similar fibers into yarn on both the woollen and worsted principle, and to convert these yarns into either woven or knitted fabrics.

Before a student can graduate from this course he must have produced on a commercial scale a fabric ready for the tailor or

dressmaker. He may choose to manufacture from the lowest grade of rags or from the highest quality of wool, but he must start with the raw material and produce the finished product on commercial machines running at mill speeds.

The yarn department comprises three complete equipments :— one for woolen yarns, one for worsted yarns on the English system, and one for worsted yarns on the French system, a total of sixty-four different machines having a value of over \$50,000.

The yarn department also gives instruction in the physical testing of all textiles and its equipment comprises instruments delicate enough to break a single fibre or a fabric with a breaking strength of 1100 pounds, in addition to machines for accurately determining the moisture content of all textiles.

This laboratory is at the service of the manufacturing public for tests and investigations, and the students have the opportunity of working on real cases, which have a commercial, as well as an instructive value.

The students in this course, as in all the manufacturing courses, receive instruction in applied mechanism, chemistry, steam, electricity, power mathematics, efficiency, languages and patent law in addition to the necessary instruction incidental to fabricating, such as fibre structure, sorting, scouring, carding, combing, drawing, spinning, twisting, design, cloth construction, weaving, dyeing and finishing.

THE DESIGN DEPARTMENT

The first year work in the Design Department is common to all courses. This work is subdivided into elementary design, yarn calculation, elementary cloth analysis and hand-loom weaving.

Elementary design consists of a study of fundamental weaves and their various applications, construction of harness drafts and chains and color effects. At the same time free hand drawing is studied with a view to its application in jacquard designing. In yarn calculations all commercial fibres and yarns, their standards, sizes and weights are considered as far as they affect the appearance and strength of the fabric. Along with this work is taken up the analyzing of various cloths with the idea of

determining the weaves used and the distinction of warp from filling. Elementary cloth analysis treats the matter on the take-up basis, determining the sizes and weights of yarns used. During the first year hand-loom weaving is given for the purpose of instruction in the fundamental principles of weaving, preparing and weaving small warps and designs made by the students.

In the second year the work in designing is taken up more on a commercial basis. All types of woolen, worsted, cotton, linen and silk cloths are designed. Similar cloths are analyzed with the idea of reproducing the same, or constructing other cloths of similar nature. This work is subdivided for students in the cotton or woolen courses, each taking their respective cloths. Students who are studying to become designers cover both types of cloths and in addition produce original work in both fancy cotton and jacquard designs, which require and stimulate artistic ability.

Power weaving in the second year lays the foundation for plain weaving and warp preparation in the more advanced work of the next year. This work is supplemented by lectures covering thoroughly the work on the loom.

The third year designing and analysis is a continuation of the second year work, taking up the more complicated fabrics and designs. Each student is taught to estimate the cost of the various cloths which he constructs or analyzes. The work of analyzing is facilitated by means of chemical and microscopic tests to determine quantities and kinds of materials used.

Power weaving in the third year consists of fancy woolen and worsted weaving, fancy cotton, dobby, jacquard, plush and carpet weaving. In addition to weaving these cloths the student is required to do all the preliminary work necessary to prepare the warp for the loom, i. e., dressing, beaming, drawing-in, preparing harness and box chains and putting the warp into the loom.

In summing up, the student in the design department is given thorough instruction in the laying out and construction of all types of cloth from the start to finish. A student taking the Design Course will have good opportunities in the textile industry and will be well fitted to take up, not only designers' positions, but in fact almost any executive position in connection with the textile trade.

THE CHEMISTRY AND DYEING DEPARTMENT

The fundamental object of the Chemistry and Dyeing Department is to teach chemistry, not only as related to Textile Coloring, but as applied to the whole textile industry. The scope of this application will be more fully realized if we consider for a moment its magnitude.

No industry requires the use of so great a variety of chemical substances or involves in their application more complicated chemical reactions than the textile industry. Fundamentally, we must consider the chemistry of the fibres themselves, the study of their composition, and the action upon them of the various reagents and chemicals with which they may come into contact during the various processes of bleaching, scouring, mordanting, dyeing, printing and finishing. These considerations, in conjunction with the chemistry of the dyes themselves and their production, involve some of the most complicated reactions of both Inorganic and Organic Chemistry. The chemistry of the available water supply, as well as of the power plant, are also of vital importance in the economical management of a modern textile manufacturing concern. Among other important considerations of the textile chemist are the identification of fibres and starches with the microscope, the testing of dyes for fastness toward light, washing and numerous other color destroying agencies, identification of dyes, both upon the dyed fabric and in the commercial form, and color matching.

To a well regulated textile plant the chemist or chemically trained dyer is indispensable if the management would obtain the most economical results and the greatest efficiency, and failure to recognize this fact frequently costs a mill in a week's time an amount equivalent to such a man's salary for a whole year. The testing of fuels, oils, soap, chemicals, dyestuffs, sizing and finishing materials will, in most cases, prove a paying investment, to say nothing of the moral effect such a practice has upon the tradesman who furnishes these materials. By such a practice many frauds and cases of excessive adulteration may also be escaped. Again, the chemically trained dyer through his scientific knowledge may often prevent or quickly ascertain the causes of spots, streaks and unevenness in general, which are the bane of

every manufacturer of cloth, and thus prevent an enormous financial loss from rejected goods and cancelled sales.

The scope of Textile Chemistry and the application of dyes is so great that the man who would enter this field must have as thorough a training in chemistry as would be required for any other. It is with these facts in mind that the work of the Chemistry and Dyeing Department of the Lowell Textile School has been planned. Textile Chemistry and Dyeing is necessarily foremost in the general training, but chemistry has been made the foundation of each of the four years' work and sufficient applied chemistry of a general character has been introduced to permit graduates not only to enter the field of Textile Chemistry, but almost any other line of allied industrial chemical work in case the necessity demands.

THE ENGINEERING DEPARTMENT

The Engineering Department serves two important functions in the work of the school.

- 1st. It provides the instruction in the fundamental branches of mathematics, mechanics, mechanism, physics, and mechanical drawing, all of which are most essential in any thorough technical training, irrespective of its field of application.
- 2nd. It supplies the broadening factors necessary for a well-balanced specialized training, by including instruction in the numerous branches of engineering most closely related to the textile industry such as mill engineering, steam and electrical engineering, machine shop practice and efficiency engineering.

In all subjects both elementary and advanced, particular emphasis is laid upon their practical usefulness as well as their relation to dependent courses.

Under the head of Mill Engineering, practically all the problems involved in design of a complete mill plant are taken up in detail, including the various types of building construction, machinery and shafting layouts, power distribution, mill heating and fire protection.

In the subjects of steam and electrical engineering, well equipped laboratories, together with the extensive power and heating plant of the school, provide ample facilities for the practical testing of boilers, engines, turbines, pumps, motors, generators, and other power equipment. The recent advances in mill lighting have led to the addition of complete apparatus for all kinds of illumination tests. Opportunities are also frequently offered for testing of various kinds in the local mill plants.

All of the repair work on the extensive machinery equipment of the school is done by students in the machine shop where all of the work is of the most practical character.

The adoption of efficiency methods in many of the textile mills and the consequent demand for graduates for this work made courses in Business Administration necessary, and under this general head are included Mill Cost Accounting, Modern Business Systems and Efficiency Engineering.

This school was first to offer full and complete courses in the specialized branches of engineering applicable to the industry, and the result is the present four-year degree course in Textile Engineering, which offers the broadest training now available for service in the textile industry.

THE FINISHING DEPARTMENT

The department of finishing, comprising woolen, worsted and cotton finishing, is designed to give theoretical and practical instruction in the finishing of fabrics. This is accomplished by means of lecture, recitation and laboratory work.

During the lecture periods a study is made of the late types of finish peculiar to the different lines of staple and fancy goods. Detailed instruction is also given regarding the best method of producing the finish and developing the characterization peculiar to various fabrics. This work is intended to thoroughly familiarize the student with the different types of woolens, worsteds and cottons, so that the various fabrics, their quality and correctness of finish may be determined. Instruction is also given on the various types of finishing machinery, their adjustment and operation.

In the woolen finishing laboratory, the student is given practical experience in the finishing of many lines of fabrics, such as—kerseys, broadcloths, meltons, thibets, chevots, overcoatings, close-finished worsteds, unfinished cheviot worsteds, and many lines of fancy dress goods. In the cotton finishing laboratory, experience is obtained in the finishing of a wide range of goods among which may be mentioned—ginghams, lawns, organdies, voiles, cambrics, sheeting, towelling and several lines of fancy shirtings and dress goods.

THE LANGUAGE DEPARTMENT

The training of a young man for the various fields offered in the textile industry cannot be considered complete without ability to express his thoughts and ideas in a clear, concise and accurate manner. Hence all courses at this school include, during the first year, instruction in the writing of the English language. This work is continued in the second year through the subject of Industrial History, which not only furnishes profitable subjects for written exercises, but also acquaints the student with the industrial, economic and, to some extent, the social advancements that have taken place during the past century in some of the important manufacturing countries of the world.

The subject of Economics in the third year brings to the student's mind some of the recognized fundamental principles governing the values of commodities, their distribution, demand and supply that enter into the business world. In this way his technical training is more closely associated with the commercial life.

Two foreign languages, French and German, are included in the course of studies. These are given that the student may be able to translate from these languages information that will be of immediate aid to him in his work. Two years' work in at least one of these languages is required in the four year courses and in the Chemistry and Dyeing course German is used in some branches during the entire four years.

Address of Naval Constructor F. G. Coburn, U. S. N.

DAY COMMENCEMENT, JUNE, 1917

The graduates of this school leave it with a knowledge of the technology and technique of textile manufacture. They have come to the best place of which we know to get that sort of knowledge, and take away all that they can carry. Obviously then their first aim, after leaving the school, is to gain experience.

It is said that experience is the best teacher; and, indeed, it is the idea of the older mill men that experience is the *only* good teacher. A mill superintendent who has spent fifteen or twenty years in the mill believes that in no other way is it possible for a man to acquire knowledge of textile manufacture equal to his. It is the idea that was perpetuated in Sir Joseph Porter's song in "Pinafore."

Experience *is* a good teacher, because the lessons acquired from experience are acquired slowly and are more completely assimilated. What we learn from experience—whether the knowledge be accurate or inaccurate—becomes a part of our mental equipment—becomes a part of us.

I think of a superintendent who had, all his life, been a student of economics, who knew his subject thoroughly, and was a source of wonder to young college students who came into contact with him. He always said that the students *studied* economics; that he *lived* economics, and had read and applied and observed the immutable principles of economics through fifty years of mill experience.

Whilst experience is a good and even sufficient teacher, and whilst education without experience is insufficient, the combination of education with experience is superior to either. Education saves time to the students, and, therefore, to society in general.

I have referred to the inaccuracies of deduction from experience, which are usually due to insufficient facts, to untrained reasoning powers, and to lack of trained, co-ordinated help in deduction. These things education supplies. Our educational institutions are peopled with patient investigators who have sought and are constantly seeking facts. They teach students to reason; and the reasoning students are brought into contact with the facts by trained teachers who are in co-ordinated action.

Education without experience fails, because the facts come too fast for assimilation by the members. The laboratory work that educational institutions are furnishing so freely nowadays is offered with a view to effecting more complete memory assimilation.

But whether or not there is complete assimilation, subsequent experience produces situations which recall teachings, some of them, at any rate, and it is a good thing to know that the mastery of those teachings not actually used subsequently has at least developed the mind in thinking, reasoning, and memorizing qualities.

Experience is always necessary to establish proportion and perspective; which is to say, to develop judgment in matters of technology, technique, and in the more important matter of human nature.

In technological and technical institutions we learn mostly of material, of methods, of quality. It is most important to learn the weight of the cost factor, the costs of labor and material; the weight of the production factor, the importance of maximum production per dollar invested; the importance of producing the goods desired at the time desired.

It is largely due to a lack of appreciation of these things, which comes of experience, that college men have not been in great favor among business men and manufacturers. And another reason for this lack of appreciation of college men is found in the opinion held by some college men that there is but little more for them to learn. This is frequently a true bill against college graduates, and it is unfortunate that it is true; unfortunate for society in general, and for the men in particular; it limits their field, because they cannot learn more than they already know.

We must learn to respect men who have knowledge born of experience, for they have a sense of proportion, of perspective, and of judgment as to what men will do, how men will act under trying conditions.

So it becomes necessary for us as we graduate to learn these things from experience, and to show by our work, by our deeds, what we are worth. It is by what we do that we are judged, and not by what we say. Therefore, the less we talk, the more we can do; and, therefore, the better for us. Silence and uncomplaining industry are, indeed, golden attributes; and we all may pattern after Stonewall Jackson, that great general, who was reticent to the last degree, quick in decision, sudden and mysterious in action, and unfailing in results, and, therefore, the ideal of every modern soldier. Yet he probably said less about how good he was than any other one general officer in the Civil War.

Individual industry, to be valuable, must be effective, fully effective; that is to say, efficient. Each of us must think of his own job, not of the other man's, and make his own work as nearly perfect as is possible.

It was thought, up to a few years ago, that the lack of individual industry and efficiency was the root of the evils in industry; but we have now taken a broader view, and we see that it is the ineffectiveness of *management* that is of greater importance than the ineffectiveness of individual workmen.

Consider, for the moment, a gasoline engine, each of its cylinders working perfectly, individually, but not timed rightly, with reference to each other, so that at times cylinders are working against each other. It is obvious that an engine thus adjusted cannot develop its full power and become fully effective.

That is a sort of condition that now obtains in our factories and mills; and it is the object of management to time the activities of all persons and producing units properly, with reference to each other, so as to eliminate these oppositions. All factory and mill management problems are human problems. The machines and material do according to their users.

Our job is to handle the men, and the machines, and material, will then take care of themselves. It is the business of

organizers to put men in their proper places, with respect to each other, with respect to duties, responsibilities, and authorities, so that the work of management may be properly done.

Military students and authorities know the value of organization—know it as a matter of life and death—and hence regard as a heavy responsibility the duty of carrying out its principles. They know that organization is necessary, in order that orders may be carried out, and hence that campaigns and wars may be won.

In peace time, since armies and navies and countries are not in competition, the value of organization is forgotten, except by thinkers and students. Hence organizing effort atrophies, and organization disappears, or becomes loose.

In war time the principles of organization must be awakened and put into effect. It has been shown in the history of every war, that re-organization takes place. This war, in particular, has driven home this lesson, for not only has the military systems been re-organized, but the political systems of the countries at war, and so ours will also be re-organized, sooner or later.

Since business has grown big, and wider in its ramifications than in older times, it is involved organically in this struggle, and therefore it too must be re-organized. Abroad this necessity has been recognized, and the re-organization is under way. Here it has not generally been recognized, and the re-organization has not started, but we have only to look across the ocean to see what is in store for us.

You, gentlemen, are going into the textile industry, an industry which has been, for years, protected by a tariff wall, and in which the principles of organization have been forgotten, as the textile business has not been in real competition, as we know it today.

The technology, technique, and mechanical development of this industry are excellent, but the conditions as to organization and management are relatively bad. The textile industry must be re-organized, just as all the other industries must be re-organized, but the work to be done is greater, relatively, than in some other industries. This re-organization is to be made necessary because the textile industry is involved organically in

the great war, and because re-organization is essential to its economic existence with or without war.

This has been recognized by some of the leading minds in the textile industry, and here and there movements are on foot to carry it out. Those who realize this necessity and know how to carry it through will do it. Those who do not know how to effect this re-organization must do another's bidding. Those who oppose the forces of re-organization will be overridden.

It is the duty of you young men to know and do these things.

Go, therefore, and learn what organization is; learn what the responsibilities are that must be shouldered by the personnel of the management of the mill; profit by the lessons of the past; learn what to do; learn how to do it, and when to do it. Keep your own counsel; work hard. Do not consider that the day's work is done with the evening whistle-blow, but only that there is a respite from the day's work, and that the night work of study and mental improvement can begin. Watch the process of re-organization; fit yourself into the movement; and fit yourself for the great future, greater than anything in the past, of the textile industry.

SERIES 21. NO. 2

November, 1917

BULLETIN

OF THE

Lowell Textile School

LOWELL, MASS.

Issued Quarterly

1917 - 1918

Entered August 26, 1902, at Lowell, Mass., as second class matter,
under Act of Congress of July 16, 1894.

Moody Street and Colonial Avenue

Lowell Textile School Men With The Colors

The entry of this country into the present world conflict did not find either the undergraduates or alumni lacking in patriotism. Hardly had the plans for enlistment been developed in the spring of this year before students began leaving school to enter some branch of the service. One of the first departments of the army to apply to the school for assistance was the Depot Quartermaster at Boston, and before the close of the school three of the instructing staff,—John H. Howker and John C. Lowe of the Wool Department and Louis C. Playdon of the Cotton Yarn Department were granted leave of absence to enter this depot as inspectors of textile material. Shortly after the close of school Alexander D. Davis, instructor in the Engineering Department, entered the employ of the Ordnance Department as draftsman and has since been stationed at the Springfield Arsenal.

With the commencement of the summer vacation and even before some twenty or more undergraduates entered the Quartermaster Department of the Army at Boston serving, in some cases, until the opening of school this fall, and in a few cases, continuing their work in this department by postponing return to school until the close of the war.

At the same time that the call came from the Quartermaster Depot, Lieutenant Colonel Howe and Captain Needham of Lawrence addressed the student body upon the opportunities offered in the new regiment of heavy field artillery that was being organized. As a result twenty-four of the students from all classes of the day school enlisted in the local battery. Later a number of these men were chosen as sergeants, corporals and buglers and recently from "somewhere in France" comes the report that one sergeant, Wilbur F. Berry, Class 1917, has been commissioned First Lieutenant.

The Ordnance Department found need for men who had the training in Textiles, Chemistry and Engineering as given by this school and in response to requests several students and graduates entered this department, and up to the present are continuing to give assistance where their knowledge and training can be of greatest value.

The school has endeavored to learn as much as possible concerning all past students who are in any branch of service and is continuing to add to its present information. Below is given a list of L. T. S. men, past students, undergraduates and graduates from the day classes who are serving their country, and it is earnestly requested that any reader of this bulletin will carefully examine this list and advise the Principal of any errors or names that have been omitted.

A service flag containing fifty stars has been hung in the main school office. This represents the number of undergraduates who have entered directly from the school some uniformed branch of the service, and while the number was correct at the time the flag was ordered, this has been increased since and it is planned to add one more star for each student as he enters from school to service. Therefore, the school will appreciate any information sent to it concerning any past or recent student who is serving in any branch of the Government. Help make this list larger and accurate and increase the stars on the field of the service flag.

GRADUATES IN MILITARY SERVICE

NAME AND ADDRESS	BRANCH OF SERVICE
Wilbur F. Berry, '17 30 Forest St., Worcester, Mass.	1st Lieut., Battery F, 102nd Regiment, Heavy Field Artillery.
Elmer C. Matthews, '17 517 Beacon St., Boston, Mass.	Battery F, 102nd Regiment, Heavy Field Artillery.
C. S. V. Sjostrom, '17 58 Church St., Ware, Mass.	Battery F, 102nd Regiment, Heavy Field Artillery.
Roland H. Fletcher, '10 Littleton Common, Mass.	Aviation Corps, 57th Aero Const. Sqdr., Hempstead, L. I.
Homer C. Riggs, '17 South Essex, Mass.	Aviation Corps.
Wesley Keough, '10 43 Marlborough St., Lowell, Mass.	Aviation Corps.
Thomas P. Flynn, '11 8 Sanborn Ave., Somerville, Mass.	1st Lieut., in Infantry, France.
Richard G. Conant, '12 208 Van Houten Ave., Passaic, N. J.	Ambulance Corps in France.
Roger Peabody, '16 55 Harvard St., Everett, Mass.	Serg't, Co. M, 301st Infantry, at Camp Devens, Mass. (Applying for aviation section.)
Oliver F. Lane, '16 31 Georgia Ave., Lowell, Mass.	Naval Reserve, 2nd Naval Battalion Armory.
Chas. J. Cleary, '13 1493 Tremont St., Boston, Mass.	1st Lieut., Aviation, stationed Belleville, Ill.

NAME AND ADDRESS	BRANCH OF SERVICE
Wm. Watson, '11 73 Merrimack St., Haverhill, Mass.	Cadet Aviator, Belleville, Ill.
Geo. O. Richardson, '16 Woburn Rd., Lexington, Mass.	Engineering Corps.
Harold V. Farnsworth, '16 8 Wedgemere Ave., Winchester, Mass.	Chief Yeoman, Naval Reserve Force.
Harold T. Mather, '12 136 Hanks St., Lowell, Mass.	1st Lieut., Coast Artillery Corps, U. S. R.
Frank L. McCool, '10 118 Church St., Mansfield, Mass.	Sergt. Major, Military Police, 101 Hq. Train, Am. Exped. Forces.
Arnold D. Rundlett, '12 178 6th Ave., Brooklyn, N. Y.	Private, Quartermaster Corps, Camp Upton, Yaphank, L. I.
Doane W. Smith, '10 206 High St., Springfield, Mass.	Seaman, U. S. Naval Reserve Force.
Reginald C. Toshach, '11 135 Lowell Ave., Methuen, Mass.	Sergeant, U. S. Medical Corps.
James A. Irvine 1454 E. 69th Place, Chicago, Ill.	At Ayer.
Gordon B. Elliot, '12 30 Locust St., So. Manchester, Conn.	1st Lieut., Ordnance Officers R. C.
Frederick D. Manning, '10 1229 Main St., So. Manchester, Conn.	1st Lieut., Small Arms Div., Ordnance Dept.
Prescott F. Bigelow, '12 1229 Main St., So. Manchester, Conn.	1st Lieut., Ordnance Dept.
Howard M. Blaikie, '11 225 4th Ave., New York City.	Inspector textile equip., Ordnance Dept.
Paul J. Hassett, '12 104 W. Liberty St., Bridgeport, Conn.	Inspector Equip. division, Ordnance Dept.
Walter S. Lewis, '08 1773 Lanier Pl., N. W., Washington, D. C.	1st Lieut., Ordnance Dept. U. S. A.
Albert W. Sturtevant, '17 32 Brookside St., Lowell, Mass.	Govt. Inspector, Ordnance Dept.
Leslie E. Sutton, '17 29 Mahaive St., G. Barrington, Mass.	Inspector Ordnance Dept.
Alexander D. Davis, '14 444 Stevens St., Lowell, Mass.	Draftsman, Springfield Arsenal, Ord- nance Dept.
Charles L. Howarth, '17 38 Prospect St., Lowell, Mass.	Depot Quartermaster, Boston, Mass.
Archie Barlofsky, '17 135 Howard St., Lowell, Mass.	Depot Quartermaster, Boston, Mass.
Henry Sokolsky, '17 15 Sheldon St., Lowell, Mass.	Depot Quartermaster, Boston, Mass.
Hyman J. Shaber, '17 35 Factory St., Nashua, N. H.	Depot Quartermaster, Boston, Mass.

NAME AND ADDRESS	BRANCH OF SERVICE
Lawrence D. O'Connor, '17 12 Mt. Pleasant St., Woburn Mass.	Depot Quartermaster, Boston, Mass.
Harold B. Frost, '12 87 Alpine St., Somerville, Mass.	Depot Quartermaster, Boston, Mass.

GRADUATES IN Y. M. C. A. WORK

Charles R. Church, '06 400 So. 4th St., Alhambra, Cal.	Camp Physical Director at Camp Kearney, San Diego, Cal.
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UNDERGRADUATES IN MILITARY SERVICE

FIRST YEAR MEN

Eugene R. Ackley Columbus Ave., Nashua, N. H.	Battery F, 102nd Regiment, Heavy Field Artillery
Brackett Parsons 3 Robertson St., E. Milton, Mass.	Battery F, 102nd Regiment, Heavy Field Artillery.
John F. Larratt Boston Rd., Billerica, Mass.	Battery F, 102nd Regiment, Heavy Field Artillery.
Frank L. Thayer (Sergeant) 17 College Ave., Waterville, Me.	Battery F, 102nd Regiment, Heavy Field Artillery.
Joseph A. Webster 268 Main St., Ward Hill, Mass.	Battery F, 102nd Regiment, Heavy Field Artillery.
Wallace C. Gurney 55 Victoria St., Lowell, Mass.	Battery F, 102nd Regiment, Heavy Field Artillery.
Donald F. Merrill 282 Buckminster Rd., Brookline, Mass.	Naval Reserve.
Howard L. Shuttleworth 321 Guy Park Ave., Amsterdam, N. Y.	Engineering Corps.
Raymond Schuster 67 West St., Franklin, Mass.	Enlisted—5th Regiment.
Stockham C. Peckham 20 Everett St., Newport, R. I.	Ambulance Corps in France.
George O. Dexter, Jr. 54 High St., Newburyport, Mass.	At Ayer.
Roger C. Hadley Concord Rd., Billerica, Mass.	Orderly, Ambulance Corps, 2nd Mass. Reg.
James K. Selden 42 School St., Andover, Mass.	1st Lieut., Aviation.

SECOND YEAR MEN

Russell L. Brown 94 Groveland St., Haverhill, Mass.	Battery F., 102nd Regiment, Heavy Artillery.
Walter S. Douglas 12 Bertram St., Lowell, Mass.	Bugler, Battery F., 102nd Regiment, Heavy Field Artillery.

NAME AND ADDRESS	BRANCH OF SERVICE
Richard F. Hadley Concord Rd., Billerica, Mass.	Battery F., 102nd Regiment, Heavy Field Artillery.
John S. Holden 378 No. Main St., Attleboro, Mass.	Sergeant, Battery F., 102nd Regiment, Heavy Field Artillery.
Carlton R. Hosley 7 Friend St., Salem, Mass.	Battery F., 102nd Regiment, Heavy Field Artillery.
Eric T. L. Laurin 40 Lundberg St., Lowell, Mass.	Battery F., 102 Regiment, Heavy Field Artillery.
Byran Leonard 1146 Commercial St., E. Weymouth, Mass.	Sergeant, Battery F., 102 Regiment, Heavy Field Artillery.
Dan W. Moorhouse Plymouth St., E. Bridgewater, Mass.	Battery F., 102nd Regiment, Heavy Field Artillery.
Carl E. Mathews So. Berwick, Me.	Battery F., 102nd Regiment, Heavy Field Artillery.
Lester E. Parker 15½ So. Avenue St., Whitman, Mass.	Battery F., 102nd Regiment, Heavy Field Artillery.
Herbert C. Roberts 90 Myrtle St., Shelton, Conn.	Battery F., 102nd Regiment, Heavy Field Artillery.
Philip J. White 131 Grove St., Lowell, Mass.	Battery F., 102nd Regiment, Heavy Field Artillery.
Harold E. Crippen 335 West Main St., No. Adams, Mass.	At Ayer.
Mortimer T. Farley Central Ave., Stonybrook, Mass.	American Field Service in France.
Malcolm H. Smith 115 Prospect St., Gloucester, Mass.	Mass. Gun Co., at Ayer.
Parker Longbottom 5 Baldwin St., Sanford, Me.	Applying for Aviation Service.
Ralph Berg Chelmsford, Mass.	Radio Service
Kenneth R. Goodacre 34 Park Ave., Wakefield, Mass.	Royal Naval Air Service, Gt. Britain.
Charles W. McClellan 928 Rock St., Fall River, Mass.	Aviation Section, Signal Corps.
Otis R. Moore 21 Academy St., Laconia, N. H.	Sergeant, Military Police.
Wm. J. Rider 11 New St., Danbury, Conn.	U. S. Ambulance Service.
Edward S. Ross 1 Evandale Terrace, Boston, Mass.	Co. F, 101st Engineers.
Morris H. Cone Hartford, Vt.	Naval Reserve.

THIRD YEAR MEN

Mahlon W. Dennett 7 Washington St., Winchester, Mass.	Battery F, 102nd Regiment, Heavy Field Artillery.
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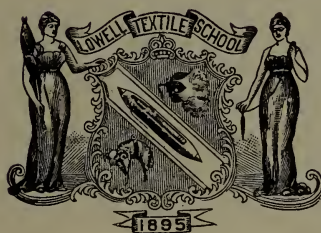
NAME AND ADDRESS	BRANCH OF SERVICE
George H. Johnson 168 Webster St., Haverhill, Mass.	Battery F, 102nd Regiment, Heavy Field Artillery.
Walter W. Powers 1A Ivy St., Boston, Mass.	Battery F, 102nd Regiment, Heavy Field Artillery.
Merrill, Morris 644 Varnum Ave., Lowell, Mass.	Naval Reserve.
Wm. J. Moore 164 Andover St., Lawrence, Mass.	Naval Reserve.
Arthur N. Hart 43 Swan Ave., Lowell, Mass.	At Ayer.
Dwight L. Dimock Billerica, Mass.	U. S. Engineers, Co. B, 6th U. S. Engr.
Julius Kaatze 64 Water St., Lawrence, Mass.	U. S. Engineers.
Joseph I. Sullivan 29 Hancock St., Everett, Mass.	Aviation Sec., Signal Corps.
Herbert Parker 21 Florence Ave., Norwood, Mass.	Springfield Arsenal.
A. S. Zimmermann P. O. Box 181, Great Neck Station, N. Y.	Tex. Inspec, Boston, Quartermaster Dept., U. S. A.

PAST STUDENTS IN MILITARY SERVICE

George E. Hood 11 Shattuck St., Nashua, N. H.	Tex. Inspec., Quartermaster Depot, Boston.
Harold E. Davis 62 Beech St., Franklin, N. H.	Misc. inspec., stationed at Mercury Mills, Hamilton, Ont.
Hector G. MacDonald 320 Cabot St., Beverly, Mass.	Inspec. of textiles, stationed at Imperial Cotton Co., Hamilton, Ont.
Frank Fendel 627 Harrison Ave., Boston, Mass.	Inspector, Quartermaster Dept., Boston.
Charles L. Winn 808 Commonwealth Ave., Newton, Mass.	First Class Seaman, Naval Reserve.
Harry Spencer 513 Forest Rd., Roland Park, Md.	Private, Camp Yaphank, L. I.
Leo A. Bissonette 300 Varnum Ave., Lowell, Mass.	Musician in band at Camp Devens.
Fred Abbott 5 Church St., Dexter, Me.	Naval Reserve.
James S. Goodwin 4 Osgood Pl., Amesbury, Mass.	Lieut. Dental Surgeon.
Carroll M. Cudlip 35 Carleton St., St. John, N. B.	Capt., with Canadian Siege Battery. (1st L. T. S. man to go over-seas in April, 1915.)

NAME AND ADDRESS	BRANCH OF SERVICE
Herbert A. Sturtevant 60 Roseland St., Cambridge, Mass.	Naval Reserve.
Ralph H. Kimball 2569 Brown Ave., Manchester, N. H.	Artillery.
Hueston Collingwood 12 Vernon St., Plymouth, Mass.	Artillery.
Karl Moore 16 Dickerman Rd., Newton Hgh., Mass.	Artillery.
Lloyd M. Pearl Johnson, Vt.	Infantry.
Francis W. Comey 185 Upham St., Melrose, Mass.	Infantry.
Samuel W. McCleary 304 Locust Ave., Amsterdam, N. Y.	Infantry.
Prentise W. Blood 366 Main St., Concord Jct., Mass.	Aviation.
Albert P. Ballard 12 Glen St., Malden, Mass.	Engineers.
Frank Tenney 34 Bridge St., Manchester, Mass.	Navy Air Service.
Kenneth M. Simpson 53 Greenleaf St., Malden, Mass.	Ambulance Corps in France.
Harold Lawrence 18 First St., Melrose, Mass.	In Battery in Worcester.
Fred C. Heney 56 Harvard St., Laconia, N. H.	At Ayer.
Roscoe Roberts Fries, Va.	Aviation.
Raymond Messer 63 A St., Lowell, Mass.	1st Lieut., Aviation Sec., Signal Officers Reserve Corps.
Hammond Barnes 30 Huntington Ave., Lowell, Mass.	1st Lieut., at Ayer.
George O. Robertson 470 Andover St., Lowell, Mass.	1st Lieut., at Ayer.
Howell Shepard Amherst, Mass.	U. S. Ambulance Corps.
Hugh Berquest 259 Mass. Ave., Arlington, Mass.	U. S. Ambulance Corps.
Richard Waterhouse Warwick Ave., Centerville, R. I.	U. S. Ambulance Service.
E. E. Dickson 105 Pleasant St., Holyoke, Mass.	Sergeant, Medical Corps, Ambulance Co. No. 310.
Harry McCann 125 Denver St., Pawtucket, R. I.	Medical Corps.
Wm. F. Deady Mendon St., Uxbridge, Mass.	Works inspector, Ordnance Dept.
George I. Dawson 108 Thurston St., Somerville, Mass.	Depot Quartermaster, U. S. A., Boston, Mass.

ANNUAL REPORT
OF THE
TRUSTEES
OF THE
LOWELL TEXTILE SCHOOL
OF
LOWELL, MASSACHUSETTS
FOR THE YEAR ENDED
JUNE 30, 1917



BUTTERFIELD PRINTING COMPANY
LOWELL, MASS.
1918

Annual Report of the Trustees of the Lowell Textile School for the year ended June 30, 1917

*To the Honorable Senate and House of Representatives of the
Commonwealth of Massachusetts in General Court assembled.*

The trustees of the Lowell Textile School of Lowell, Mass., respectively submit the following report for the year ending June 30, 1917, in compliance with chapter 248, Acts of 1904, which provides:—

SECTION 1. The trustees of every textile school receiving financial aid from the Commonwealth shall, on or before the thirtieth day of January in each year, make to the general court a report containing a concise statement as to the buildings, equipment and resources of the school, the courses and methods of instruction, the number of teachers and students during the previous calendar year, and the number of teachers and students, if any, who graduated therefrom. The report shall also contain a statement verified by the oath of the treasurer of the school, and in such form as the auditor of accounts of the commonwealth shall prescribe, showing separately the amounts received during the previous calendar year from tuition fees, from the commonwealth, from any city or town, and from all other sources, and also showing the expenditures of the school during the same period, under the heads of maintenance, construction, and new equipment, and also the financial condition of the school at the close of said year.

Chapter 445, Acts of 1912, so amends the foregoing act as to change the fiscal year of textile schools from the calendar year to the school year. It reads as follows:—

SECTION 1. The fiscal year for which appropriations for textile schools shall be made and for which the treasurers of the said schools shall make their reports shall for the year nineteen hundred and thirteen begin on January first and continue to July first, nineteen hundred and fourteen; and thereafter the said year shall begin on the first day of July and shall continue until the first day of July of the succeeding year.

SECTION 2. So much of chapter two hundred and forty-eight of the acts of the year nineteen hundred and four and of chapter two hundred and eleven of the acts of the year nineteen hundred and five as is inconsistent herewith is hereby repealed.

LOWELL TEXTILE SCHOOL

TRUSTEES OF THE LOWELL TEXTILE SCHOOL IN ACCOUNT WITH
C. H. CLOGSTON, TREASURER, FOR THE YEAR ENDING JUNE
30, 1917.

MAINTENANCE ACCOUNT

Paid for—

Teachers	\$41,484.04	
Employees	9,697.22	
Administration	6,971.36	
General expense	7,798.81	
Supplies	5,738.45	
Power and light	6,764.65	
Special service	1,030.45	
Insurance	3,453.75	
Interest	2,094.16	
Contingent	1,986.78	
Chemistry refund	1,108.66	
Tuition rebate	243.43	
Reserve fund	2,842.26	
	<hr/>	\$91,214.02

Deduct ledger debits as follows:—

Cash received from—

Chemistry deposits	\$ 3,844.54	
Special service	1,166.52	
Books	3,017.78	
Stock	124.96	
Miscellaneous	177.84	
Interest	480.24	
Insurance rebate	1,998.56	
Teachers' salary rebate	400.00	
	<hr/>	11,210.44

Net cost of maintenance, 1917-1918 \$80,003.58

Cash received from—

Tuitions	\$20,698.40	
Commonwealth	50,000.00	
City of Lowell	10,004.82	
	<hr/>	80,703.22
Surplus		<u>\$ 699.64</u>

EQUIPMENT ACCOUNT

Balance on hand June 30, 1916	\$ 5,093.37	
Received from Commonwealth	1,500.00	
Amount expended		\$ 2,965.71
Balance on hand June 30, 1917		3,627.66
	<hr/>	<hr/>
	\$ 6,593.37	\$ 6,593.37

SUMMARY OF RECEIPTS AND EXPENDITURES

	Received	Paid
Cash on hand June 30, 1916	\$ 5,274.79	
Maintenance	80,703.22	\$80,003.59
General equipment and grounds	1,500.00	2,965.70
Cash on hand June 30, 1917		4,508.72
	<u>\$87,478.01</u>	<u>\$87,478.01</u>

FINANCIAL CONDITION JUNE 30, 1917

Assets

Land	\$105,639.09	
Buildings	308,181.22	
		\$413,820.31
Machinery and other equipment		284,226.98
Supplies		16,044.01
Reserve fund for depreciation		6,726.23
Cash		4,508.72
		<u>\$725,326.25</u>

Liabilities

Notes payable on demand	50,000.00
Resources	<u>\$675,326.25</u>

TRIAL BALANCE JUNE 30, 1917

	Dr.	Cr.
Lowell Textile School		\$675,326.25
Land	\$105,639.09	
Machinery and equipment	284,226.98	
Supplies	16,044.01	
Notes payable		50,000.00
Southwick Hall	142,120.30	
Kitson Hall	31,390.91	
Weave building	22,150.07	
Boiler house	45,472.80	
Weave wing extension	30,061.73	
Falmouth Street building	15,000.00	
Colonial Avenue building	21,985.41	
Reserve fund	6,726.23	
Cash	4,508.72	
	<u>\$725,326.25</u>	<u>\$725,326.25</u>

NOTES PAYABLE ON DEMAND

Dec. 31, 1916	\$10,000.00
Mar. 2, 1915	10,000.00
May 8, 1915	17,500.00
May 8, 1915	12,500.00
	<u>\$50,000.00</u>

SPECIAL BOOK PRIZE FUND ACCOUNT

Amount contributed by Prof. Louis A. Olney for prizes
of books to honor students in chemistry and
dyeing:—

	Dr.	Cr.
Balance June 30, 1916	\$33.28	
Amount received	80.00	
Amount expended		\$48.50
Balance June 30, 1917		64.78
	<u>\$113.28</u>	<u>\$113.28</u>

Graduates Book Fund

Balance June 30, 1916	\$60.00	
Amount expended		\$60.00
	<u>\$60.00</u>	<u>\$60.00</u>

To the Trustees of the Lowell Textile School.

This is to certify that I have examined the books of the treasurer of the Lowell Textile School for one year ending June 30, 1917, and find them to be correctly kept and properly vouched.

A. A. LUDWIG,
Auditor of the Corporation.

LOWELL, MASS.

LOWELL, MASS., Jan. 15, 1918.

I certify that the foregoing is a correct statement of the receipts and expenditures on account of the Lowell Textile School during the year ended June 30, 1917, and of the financial condition of the corporation at the close of said period.

C. H. CLOGSTON, *Treasurer,*
Trustees of the Lowell Textile School.

MIDDLESEX, SS.

Subscribed and sworn to before me this day.

JOHN F. SAWYER,
Justice of the Peace.

Approved as to form.

ALONZO B. COOK,
Auditor.

STATEMENT OF LAND, BUILDINGS, EQUIPMENT, RESOURCES, ETC.

LAND

Land bounded by Standish, Riverside and Moulton streets and
Colonial Avenue and Merrimack River, about 14 acres \$105,639.00

BUILDINGS

Southwick Hall: 80 by 265 feet; three stories with two-story wings and finished basement under all; cost	\$142,120.30
Kitson Hall: 68 by 252 feet; one story and basement, and two additional floors of old boiler house, 63 by 68 feet	46,266.07
Falmouth Street building: 192 by 80 feet; three stories with sub-basement under head house; cost	67,211.80
Colonial Avenue laboratories: one story, 200 by 57 feet, and 60½ by 55 foot basement	21,985.41
New boiler and engine house, with coal pockets and subway	35,318.00
Total cost of buildings	<u>\$312,901.58</u>

The floor space is occupied as follows:—

	Square Feet
Cotton yarns and knitting	16,200
Woolen and worsted yarns	28,160
Decorative art	1,446
Textile design	15,360
Power weaving	15,360
Chemistry and dyeing	28,400
Finishing	10,606
Power plant	10,047
Mechanical and electrical engineering	24,297
Assembly and physical culture halls	10,800
Administration	2,930
Entrances, corridors, stairways, toilets, store locker and lunch rooms	14,487
Total floor space	178,093
Cost per square foot of floor space	<u>\$1.74+</u>

SUMMARY OF EQUIPMENT AND MACHINERY ACCOUNT, JUNE 30, 1917

Cotton yarn department	\$38,181.69
Woolen and worsted yarn department	48,562.58
Textile design and power weaving department	34,696.61
Chemistry and dyeing department	30,425.86
Textile engineering department:—	
Department proper	\$26,928.45
Power plant	15,652.51
	<u>42,580.96</u>
Finishing department	30,221.82
Corridors	106.00
General office	1,118.78
Principal's office	808.75
Trustees' room	881.40
Lecture hall	865.36
Janitor's room	409.06
Lunch room	214.01
Storeroom	236.18
Library	3,208.63
Language department (room No. 67)	278.50
Students' room	1,089.50
Physical culture apparatus	549.77
Southwick Hall	11,495.79
Kitson Hall	1,503.11

Weave building and head house	4,663.02
Boiler house (old)	9,413.24
Boiler house (new)	6,141.91
Miscellaneous equipment	16,574.45
	<u>\$284,226.98</u>

SUMMARY OF SUPPLIES ACCOUNT, JUNE 30, 1917.

Cotton yarn department	\$ 135.90
Woolen and worsted yarn department	862.50
Textile design and power weaving department	3,386.38
Chemistry and dyeing department	9,208.58
Textile engineering department, power plant	172.45
Finishing department	755.49
Office	263.14
Janitor's rooms	29.93
Storeroom	1,229.64
	<u>\$16,044.01</u>

COURSES OF INSTRUCTION

CLASSIFICATION OF DAY STUDENTS BY COURSES

	First Year	Second Year	Third Year	Fourth Year
Cotton manufacturing	2	9	2	—
Wool manufacturing	10	9	3	—
Textile design	6	8	1	—
Chemistry and dyeing	30	17	20	6
Textile engineering	20	19	7	6
Course not chosen	2	—	—	—
	<u>70</u>	<u>62</u>	<u>33</u>	<u>12</u>
Total	177			

CLASSIFICATION OF EVENING STUDENTS BY COURSES

	First Year	Second Year	Third Year	Post- graduate
Cotton spinning	54	26	6	—
Knitting	8	—	—	—
Woolen and worsted spinning	22	12	5	—
Textile design	32	11	9	—
Freehand drawing	29	12	4	2
Elementary chemistry	52	25	—	—
Textile chemistry and dyeing	14	6	6	—
Analytical chemistry	9	2	—	—
Cotton weaving	18	—	—	—
Woolen and worsted weaving	22	—	—	—
Mechanics	191	—	—	—
Steam engineering	—	12	—	—
Electricity	—	—	40	—
Mechanical drawing	109	20	8	—
Machine shop	61	14	—	5
Mathematics	56	—	—	—
Woolen and worsted finishing	19	—	—	—
	696	140	78	7
Total				921
Names counted twice				85
Net total				836

NUMBER OF STUDENTS

Day classes	177
Evening classes	836
Total	1,013
Graduated:—	
Day classes	18
Evening classes	101
Total	119

TEACHERS

NUMBER BY DEPARTMENTS

Day and Evening Classes

Cotton yarn	3
Woolen and worsted yarn	3
Textile designing and weaving	6

Chemistry and dyeing	6
Textile engineering	7
Finishing	2
Language and history	1
Physical culture	1
Total	29

Evening Classes Only

Cotton yarn	1
Textile design and weaving	2
Textile engineering	2
Total	5
Average number of students per teacher	35

ROSTER OF SCHOOL OFFICERS AND INSTRUCTION CORPS.

PRINCIPAL

Charles H. Eames, S.B., Massachusetts Institute of Technology, 1897. Active member of the American Society of Electrical Engineers. Experience: secretary of the Lowell Textile School and instructor in electrical engineering and mathematics; superintendent, Light, Heat and Power Corporation, Lowell, and engineer with Stone & Webster, electrical engineers, Boston, Mass.

INSTRUCTORS

Textile Engineering

George H. Perkins, S.B., chief instructor. Massachusetts Institute of Technology, 1899. Member, American Society of Mechanical Engineers. Consulting engineer for Lowell Bleachery. Experience: draftsman, Ludlow Manufacturing Company, Ludlow, Mass.; Lockwood, Greene & Co., Boston, Mass.

Herbert J. Ball, S.B., B.C.S., instructor in mechanical engineering. Massachusetts Institute of Technology, 1906; Northeastern College, 1916. Experience: draftsman, Watertown Arsenal; Lincoln-Williams Twist Drill Company.

Ulysses J. Lupien, S.B., instructor in mathematics, physics and electrical engineering. Lawrence Scientific School, 1906. Experience: draftsman, General Electric Company, Lynn, Mass.; with Winston Company, Metropolitan Water Board.

Alexander D. David, B.T.E., instructor in mechanical drawing. Lowell Textile School, 1914. Experience: Lowell Machine Shop; Lowell Bleachery; Boott Mills, Lowell, Mass.; Shetucket Company, Norwich, Conn.; instructor in Textile School, South Manchester, Conn.

Albert J. Lindsley, evening instructor in mechanical drawing. Massachusetts Institute of Technology, 1902. Experience: resident engineer, Waddell & Hedrick, bridge engineers of Kansas City; track engineer, Bay State Street Railway Company, Boston, Mass.; superintendent, Old Colony Construction Company, Boston, Mass.; assistant engineer, National Engineering Corporation, Boston, Mass.

Charles H. Jack, instructor in machine shop practice. Lowell Textile School. Experience: Amoskeag Manufacturing Company, Manchester, N. H.

C. Warren Howe, Jr., evening assistant instructor, machine shop practice. Lowell Textile School, evening class, 1914. Experience: machinist, Saco-Lowell Shops, Lowell, Mass.

Chemistry and Dyeing

- Louis A. Olney, S. B., M. S., chief instructor. Lehigh University, 1896. Member, American Institute of Chemical Engineers. Experience: instructor, Brown University; dyeing and finishing department, Stirling Mills, Lowell, Mass.
- Howard D. Smith, Ph. D., instructor in chemistry. Tufts College, 1906; Brown University, 1904; Rhode Island College, 1901. Experience: assistant instructor, Brown University and Tufts College; instructor, Beloit College, Wisconsin.
- Robert R. Sleeper, instructor in dyeing. Lowell Textile School, 1900. Experience: Read, Holiday and Sons, Limited, New York City; H. A. Metz & Co., New York City; Hamilton Print Works, Lowell, Mass.; Merrimack Manufacturing Company, Lowell, Mass.
- Bertrand F. Brann, S. B., M. S., instructor in chemistry. University of Maine, 1909; Massachusetts Institute of Technology, 1912. Experience: instructor at University of Maine; assistant instructor, department of research, Massachusetts Institute of Technology.
- Russell B. Stoddard, A. B., instructor in chemistry. Clark College, 1912.
- Joseph W. Sawyer, B. T. D., assistant instructor in chemistry. Lowell Textile School, 1915. Experience: Price Fire and Water Proofing Company, Poughkeepsie, N. Y.

Textile Design and Weaving

- Hermann H. Bachman, chief instructor. Gera Textile School, Germany. Experience: Gustav Weise Public Designing House for the city of Gera; Parkhill Manufacturing Company, Fitchburg, Mass.; Lorraine Manufacturing Company and Smith Webbing Company, Pawtucket, R. I.
- Stewart Mackay, instructor in textile design and cloth analysis. Lowell Textile School, 1906. Experience: Bay State Mills, Lowell, Mass.; George C. Moore Wool Scouring Mills, North Chelmsford, Mass.
- Andrew Younger, instructor in design and weaving department. Lowell Textile School, evening class, 1913. Experience: Merrimack Woolen Mills, Lowell, Mass.; Clinton Worsted Company, Clinton, Mass.; Nashua Valley Mills, Ashaway, R. I.; Merchants Woolen Company, Dedham, Mass.; C. A. Root Manufacturing Company, Uxbridge, Mass.
- Martin Hoelrich, instructor in power weaving. Lowell Textile School, evening class, 1910. Textile school, Reichenbach, Germany. Experience: C. F. Weiss, Helmrechts, Germany; J. Bach, turkish shawls, Reichenbach, Germany; Parkhill Manufacturing Company, Fitchburg, Mass.; American Woolen Company, Lawrence, Mass., and Winoski, Vt.; Pacific Mills, Lawrence, Mass.
- E. Elizabeth Whitney, evening instructor in freehand drawing. Normal Art School, Boston, 1882. Pupil of Dr. Denman W. Ross, lecturer in design, Harvard University. Experience: teaching eighteen years.
- Edith C. Merchant, evening instructor in freehand drawing. Normal Art School, 1908. Experience: teaching, evening drawing school, Lowell, Mass.; supervisor of drawing, Pepperell, Mass.

Cotton Yarns

- Stephen E. Smith, chief instructor. Lowell Textile School 1900. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.; Atlantic Cotton Mills, Lawrence, Mass.; Shaw Stocking Company, Lowell, Mass.
- Louis C. Playdon, instructor in cotton spinning. Lowell Textile School, evening class, 1914. Experience: Atlantic Mills, Lawrence, Mass.; Pacific Mills, Lawrence, Mass., and Dover, N. H.
- George Goodchild, evening instructor in cotton spinning. Lowell Textile School, evening class, 1903. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.

Woolen and Worsted Yarns

- Edgar H. Barker, chief instructor. Massachusetts Institute of Technology, 1896. Experience: Pacific Mills, Lawrence, Mass.; E. Frank Lewis, Lawrence, Mass.; wool scouring.
- John N. Howker, instructor in wool sorting and scouring. Technical School of Saltaire near Bradford, Eng.; certificate from city and guilds of London. Experience: Saltaire Mills, Yorkshire, Eng.; Goodall Worsted Company, Sanford, Me.; Arlington Mills, Lawrence, Mass.
- John C. Lowe, instructor in woollen and worsted yarns. Lowell Textile School, evening class, 1911. Experience: Wood Worsted Mills, Lawrence, Mass.

Finishing

- Arthur A. Stewart, chief instructor. Lachine Academy, Canada; Lowell Textile School, 1900. Experience: Dominion Woollen Manufacturing Company, Montreal, Can.; American Woollen Company Mills; Nonantum Worsted Mills, Newton, Mass.; instructor in woollen and worsted yarns, Lowell Textile School.
- C. Leonard Glen, instructor in finishing. Experience: Dunnell Manufacturing Company, Pawtucket, R. I.; United States Finishing Company, Pawtucket, R. I.; O'Bannon Corporation, West Barrington, R. I.

Languages and History

- Lester H. Cushing, A. B., chief instructor. Harvard College, 1911.

Physical Culture

- David B. Morey, S. B., Dartmouth College, 1913. Member of Philadelphia Baseball Club, American League, season 1913; assistant coach, Dartmouth College Foot Ball Team, fall of 1913; studied abroad on physical culture. Experience: coach for various teams in preparatory schools.
- Archibald R. Gardner, M. D., medical adviser. Harvard University, 1902.

The following changes in the roster of teachers is noted:—

Albert J. Lindsley, evening instructor in mechanical drawing appointed, *vice* Edgar L. Woodward, resigned.

Joseph W. Sawyer, B. T. D., assistant instructor in dyeing, *vice* George O. Richardson, resigned.

David B. Morey, instructor in physical culture and language, *vice* Ralph E. Guillow, resigned.

Martin Hoellrich, instructor in power weaving, added to instruction staff.

POSITIONS HELD BY DAY GRADUATES

Directors of textile schools	1
Teachers	10
Mill vice-presidents	2
Mill treasurers and agents	13
Mill superintendents	21
Mill assistant superintendents	14
Mill foreman of departments	13
Assistants to superintendents	2
Mill auditors and accountants	3
Mill clerks	1
Second hands	5
Managers	26
Textile designers and fabric experts	13
Purchasing agents	3
In commission houses	5
Salesmen	12
Chemists, dyers and chemical salesmen	58
In government employ	2
In United States military service	36
In State employ	1
Textile manufacturing, unassigned	17
Industrial engineering	14
Mill engineering	6
Civil engineering	1
Electricians	1
Trade journalists	4
In business, textile distributing or incidental thereto	4
Other business	17
Employment not known	22
Married women	3
Not employed	2
Deceased	9
Total	341

METHODS OF INSTRUCTION

Instruction is first given in the principles of the sciences applicable to the textile and textile machinery industries, followed by instruction in the practical art,—the application of such sciences to the processes and machinery of manufacture.

Day instruction offers five courses of three or four years, as the student may elect, namely, cotton manufacturing, wool manufacturing, textile design,—including weaving and finishing,—chemistry and dyeing, and textile engineering.

All freshmen in the day classes during the first half year receive the same general instruction. At the beginning of the second half they are expected to choose one of the regular day courses. Each course, however, in addition to the specialty indicated by its name, includes some features of every other course, as such instruction, it is found, adds to the efficiency of the pupil by giving added breadth in the line he has chosen.

While there are several regular courses offered, they may be generally grouped in three grand divisions, namely, textile engineering, chemistry and dyeing, and textile design.

Textile engineering includes the mechanism of all the machinery used in every department of the school, and also machine-shop practice; and instruction in the generation, transmission and application of power, whether steam, hydraulic, electrical or gas. In boiler and engine testing, for which a complete and modern laboratory is provided, the pupils are called upon to make, or are afforded opportunities for conducting, continuous twenty-four-hour tests, boiler or plant tests, etc. This division also includes mill construction of all modern types, viz., steel, concrete masonry brick and wood, and combinations of both, involving the laying out of plants, selection and management of machinery, shafting, etc.; the use of the transit in surveying; mechanical drawing; and the plans for and the construction of equipment. The pupil is first thoroughly grounded in the principles of mechanical, electrical and hydraulic engineering before attempting the more advanced and specialized problems. The higher mathematics form an important part of the work of this department. The subject of physics lays the foundation upon which are built the courses in electricity, hydraulics and mechanics, and it also finds application in the testing of fibers, yarns and fabrics. The plans for the school buildings are prepared in this department, and all construction is superintended during the summer vacation by the engineers and pupils, who may remain for practical experience in this line of work.

Chemistry and dyeing involves a thorough course in chemistry, followed by an applied course, first in the laboratories, and finally on commercial vats, presses, kiers, driers, etc., in dealing with raw stock, yarns and fabrics. A special and growing branch is the making of dyes from minerals, vegetables, oils, etc. A special laboratory is equipped for testing coal and oil.

Textile design includes, first, instruction in color, conventionalizing of nature forms, historic ornament, etc., fundamental to all branches of decorative art: second, the application thereof to textiles. Included under this head is all fabric weaving and finishing.

Incidental to these general divisions is instruction in English, German, French and physical culture, to which it is desired to add Spanish and Portuguese to meet a demand from textile commission and selling houses in cultivating South American markets.

For evening instruction the day courses are subdivided into sixteen courses. These courses are arranged to cover substantially the same subject-matter as the day courses, but are planned to meet the demand of those who wish instruction in special branches and who do not necessarily wish to pursue as complete a course as do those who attend the day classes. If an evening student wishes to cover the same subjects as are offered in the day classes, he may do so, and can attain a diploma by satisfactorily passing the necessary examination.

Unlike most schools the same instructors serve day and evening, thus insuring to the evening pupils from the mills and shops the same able and thorough instruction as the day pupils. The working hours are substantially mill hours or twice the number required of instructors at high schools, academies and colleges.

It has for some years been growing more and more evident that our instructors and pupils were being overworked, and were not given sufficient time in a three-year course to deal with some advanced specialties. A postgraduate course was established to relieve the situation, for which has been substituted a regular four-year course with the offer of degrees, as recommended by the State Board of Education, in textile engineering (B. T. E.) and textile dyeing (B. T. D.), the school thus passing from the technical to the technological class as originally intended. More time will thus be given to present features of the curriculum and advanced work, to which are added scientific mill management, cost finding, mill accounting, general corporation organization, commercial law and usage, patent laws and practice, principles of banking, etc., useful and essential to our graduates as they advance to positions of responsibility in the textile industry.

Most of our day pupils matriculate directly from the high schools or academies. So thorough is their instruction that they graduate directly into employment in the industry or kindred lines, and, as they rapidly advance to the higher responsibilities, they need instruction that the school has lacked time to impart. Hence, in addition to the technique of the industry is now included instruction incidental but essential to the positions they occupy or to which they aspire. At some technical schools and colleges it is sought to meet this need by recommending prescribed courses in reading after graduation; but this, being optional with the graduate, may or may not be given attention.

By limiting these subjects to essentials and making them obligatory, it is thought the pupils will more certainly be benefited.

The scientific method in mill management—with special reference to “efficiency or production engineering” as presented by Taylor, Gantt, Gilbreth, Emerson, Gunn, Richards, Cooke, Patterson and others, mostly of the eminent Society of Mechanical Engineers—and cost finding are leading features of the fourth year now added to the three-year course in textile engineering, competent instructors having been secured.

The published works of these engineers, or papers specially prepared by them for this school, have been furnished the fourth-year pupils; and when they are grounded in the principles of this scientific method of management, they are instructed in the methods of applying them to textile processes, and are then required to pass an examination therein.

Mindful that pragmatism, as expounded by the late Professor James of Harvard, may, from the standpoint of economics, be summed up in this, that a theory is valuable only as it is found useful in application, or, more homely expressed, “the proof of the pudding is in the eating,” approved efficiency literature is sent out to our graduates, already filling a great variety of positions, with the request that they use their eyes and brains and give us the benefit of their criticism and the problems they meet with from their various standpoints of supervision in practical manufacture.

Nearly all of the graduates go to positions that make it most important that they be fully instructed as to the latest improved methods of dealing with labor; and thoroughly trained as they are at the school in the make-up, installation and operation of machinery, they should be exceptionally capable of testing the various efficiency systems proposed. Papers already received from those in employment and from their employers indicate that “efficiency or production engineering” has a useful place in the textile industry, and will, when fully applied to all departments of a mill, result in as great benefits to employees and employers alike as has resulted in its application at the shops.

Eminent efficiency engineers are gradually being called to textile mills, and there is a steadily growing demand by them for our thoroughly trained graduates, to fill the various staff and division positions required to carry out their instructions as they install features of scientific efficiency methods of dealing with labor. From such staffs it is expected will eventually come an able body

from which to draw managers of production. The number of graduates called for by efficiency engineers is steadily increasing. It is gratifying to notice that these calls are generally from the largest and most successful mills.

The rapid application of electricity to textile machinery and processes calls for an extension of our electrical equipment, and the necessary equipment is being installed. Fiber, yarn and fabric testing, which are such prominent features of foreign schools, have already been provided for. A complete equipment of cotton finishing machinery is now in place. These additions to the plant have not yet involved any addition to our corps of instructors.

CORPORATION SUPERVISION

An annual meeting is held in January for the election of officers, reception of annual reports and the transaction of such other business as may be proposed, not committed to the Board of Directors. Frequent special meetings of the trustees at the school, sitting as a Board of Directors, are provided for. They appoint such agents, school officers and teachers as they find necessary, prescribe their duties and fix their compensation. The president (in his absence the vice-president) presides at all the meetings of the corporation and Board of Directors, and performs such other duties and exercises such other authority as the corporation or Board of Directors may from time to time devolve on him. The treasurer is charged with the general care of the pecuniary affairs and concerns of the corporation, and he receives all revenues and makes all authorized disbursements. He is required to report the receipts and expenditures and financial condition quarterly to the Board of Directors and annually to the corporation. He is also to execute all contracts made by express authority of the corporation or Board of Directors and approved by the president. The president, clerk, treasurer and two elected trustees compose a finance committee, which passes upon all orders for expenditures and inspects all bills before payment. No expenditure is authorized or liability incurred in excess of money available to meet it, except by vote of the Board of Directors at a meeting in the call for which due notice of the nature of such proposed expenditure or liability is given. The clerk is required to keep a record of all regular and special meetings of the corporation and Board of Directors, notify all members of such

meetings seven days in advance, and perform such other duties as the corporation or Board of Directors may require of him. He is a resident trustee, devoting his time to development work.

In addition to the finance committee there are general committees of ways and means, building and legislative, and lectures. There is also a subcommittee for each department of the school, composed, as far as is practicable, of trustees identified in manufacturing with the specific branch of industry to which their department relates. They are to make recommendations to the Board of Directors as to the needs, etc., of their respective departments, and especially as to the new equipment, floor space, etc., and to perform such other duties as the directors may require of them.

The principal of the school is charged with its conduct, and is directly accountable to the Board of Directors, making monthly reports thereto and such recommendations and special reports as to efficiency, discipline, etc., as in his judgment are required.

TOTAL RECEIPTS OF THE LOWELL TEXTILE SCHOOL FROM ORGANIZATION TO JUNE 30, 1917.

FOR THE PLANT, INCLUDING LAND, BUILDINGS AND EQUIPMENT

From the Commonwealth	\$318,331.66
From other sources—manufacturers and others	398,866.97
Excess of outside contributions	<u>\$ 80,535.31</u>

FOR MAINTENANCE

From the Commonwealth	\$640,000.00
From City of Lowell	\$183,546.82
From earnings (pupils' fees)	257,507.43
	<u>441,054.25</u>
Excess of Commonwealth contributions	<u>\$198,945.75</u>

AVERAGE CONTRIBUTIONS FOR ALL PURPOSES

From the Commonwealth brought down:—	
For plant	\$318,331.66
For maintenance	640,000.00
Total Commonwealth contribution	\$958,331.66
From other sources:—	
For plant	\$398,866.97
For maintenance	441,054.25
	<u>839,921.22</u>
Excess of contributions by Commonwealth for all purposes	<u>\$118,410.44</u>

REVISED ESTIMATE OF APPROPRIATIONS FOR 1918-19.

For deficiency in maintenance for the current school year 1917-18	\$ 10 000.00
For maintenance for the year 1918-19	60,000.00
For interior construction	6,000.00
For grounds	2,000.00
	<hr/>
	\$ 78,000.00

The large loss of day pupils because of the drafts for war service has, however, compelled a revision of our estimates furnished the Auditor of the Commonwealth in October last. The result, while showing the urgency for an increase for maintenance because of the loss of tuition fees, has caused the striking out of other items. The reduction from the October estimate is \$16,000.

The increase asked for maintenance is made up of \$6,500 loss of day student fees and \$3,000 increased cost of coal. Our day roster of students lost to the war thus far known is 47 undergraduates, and it is still increasing. In addition, 60 graduates are noted as called to the colors. A large number of evening pupils have also been called, and schedules of these are being made and will appear in future reports. For full explanation of the necessity for the above estimates see our petition with draft of a desired resolve.

A draft of an act providing for the transfer of our property over to the Commonwealth, and the substitution of a State Board of Managers for the present Board of Trustees, because of what is commonly known as the anti-aid amendment to the Constitution of the Commonwealth, has been filed with the clerk of the House of Representatives to take effect, if enacted, July 1, 1918, the beginning of the next school year.

Respectfully submitted,

TRUSTEES OF THE LOWELL TEXTILE SCHOOL,

By A. G. CUMNOCK,
President.

JAMES T. SMITH,
Corporation Clerk.

LOWELL, Jan. 30, 1918.

APPENDIX

RESIDENCE OF DAY STUDENTS

Adams, Mass.	1	North Brookfield, Mass.	1
Andover, Mass.	1	North Tewksbury, Mass.	1
Arlington, Mass.	1	Norwood, Mass.	1
Attleboro, Mass.	1	Pittsfield, Mass.	1
Ayer, Mass.	1	Roxbury, Mass.	2
Beverly, Mass.	2	Salem, Mass.	1
Billerica, Mass.	4	Shrewsbury, Mass.	1
Boston, Mass.	6	Somerville, Mass.	2
Bradford, Mass.	3	South Chelmsford, Mass.	1
Brookline, Mass.	3	South Essex, Mass.	1
Charlton City, Mass.	1	Stonybrook, Mass.	1
Chelmsford, Mass.	1	Waban, Mass.	1
Dorchester, Mass.	4	Wakefield, Mass.	2
Dracut, Mass.	1	Wamesit, Mass.	1
East Bridgewater, Mass.	1	Ware, Mass.	1
East Milton, Mass.	1	Ward Hill, Mass.	1
East Northfield, Mass.	1	Webster, Mass.	1
East Weymouth, Mass.	1	West Somerville, Mass.	1
Everett, Mass.	2	Whitman, Mass.	1
Fall River, Mass.	1	Wilmington, Mass.	1
Fitchburg, Mass.	1	Winchester, Mass.	2
Franklin, Mass.	1	Woburn, Mass.	2
Gloucester, Mass.	2	Worcester, Mass.	1
Great Barrington, Mass.	1	Connecticut	2
Haverhill, Mass.	4	Illinois	1
Hopedale, Mass.	1	Maine	7
Huntington, Mass.	1	New Hampshire	19
Lawrence, Mass.	8	New Jersey	4
Leominster, Mass.	1	New York	6
Lowell, Mass.	33	Rhode Island	4
Melrose, Mass.	2	Vermont	1
Merrimac, Mass.	1	Virginia	1
Natick, Mass.	1	Canada	1
Needham, Mass.	1	Brazil	1
Newburyport, Mass.	2	China	1
Newton Center, Mass.	1		
Newtonville, Mass.	1	Total	177
North Adams, Mass.	2		

PREVIOUS EDUCATION OF DAY STUDENTS

High school or preparatory school	156
College	15
Technical institute	4
Military school	1
Grammar school	1
Total	177

RESIDENCE OF EVENING STUDENTS

Andover, Mass.	12	Nashua, N. H.	1
Arlington, Mass.	1	North Andover, Mass.	13
Ballardvale, Mass.	5	North Billerica, Mass.	4
Billerica, Mass.	1	North Chelmsford, Mass.	6
Boston, Mass.	6	Pelham, Mass.	1
Chelmsford, Mass.	3	Shirley, Mass.	1
Dorchester, Mass.	2	Somerville, Mass.	1
Dracut, Mass.	8	Tewksbury, Mass.	6
Haverhill, Mass.	1	Westford, Mass.	1
Lawrence, Mass.	113	Winchester, Mass.	1
Lowell, Mass.	614		
Merrimac, Mass.	1	Total	836
Methuen, Mass.	34		

PREVIOUS EDUCATION, EVENING STUDENTS

High school (day)	270
High school (evening)	86
Grammar school	403
College	22
Preparatory school	12
Textile school	7
Technical school	6
Industrial school	11
Commercial college	9
Military academy	2
Normal school	1
Normal art school	1
Evening drawing school	2
Correspondence school	4
Total	836

OCCUPATION OF EVENING STUDENTS

Apprentice	37	Chain builder	2
Assistant superintendent	1	Chauffeur	3
Back boy	2	Chemist	6
Baker	2	Clerk	36
Bank clerk	3	Cloth examiner	1
Battery boy	2	Color mixer	1
Beamer	1	Cost clerk	1
Bleacher	1	Cotton classer	1
Blacksmith	1	Designer	5
Bobbin boy	9	Draftsman	15
Bookkeeper	2	Dressmaker	2
Box maker	4	Dyer	12
Brass worker	1	Drug clerk	3
Bricklayer	1	Efficiency engineer	4
Broom maker	1	Electrician	18
Carbonizer	1	Engineer	6
Car conductor	1	Engraver	1
Carpenter	1	Expressman	1

OCCUPATION OF EVENING STUDENTS—*Concluded.*

Finisher	5	Reporter	1
Fireman	1	Rodman	1
Fixer	13	Runner boy	4
Foreman	23	Salesman	5
Freight clerk	1	Second hand	27
Gardener	1	Shipping clerk	11
Helper	48	Shoemaker	10
Inspector	19	Signwriter	1
Insurance agent	1	Sketch maker	1
Iron worker	4	Spinner	2
Knitter	8	Steamfitter	1
Laboratory assistant	9	Stenographer	2
Laborer	9	Steel worker	5
Leather worker	2	Student	59
Loom fixer	6	Superintendent	1
Machine erector	3	Tailor	1
Machinist	90	Teacher	3
Machinists' helper	23	Teamster	1
Mail carrier	1	Telegraph messenger	1
Manager	1	Third hand	5
Mill clerk	54	Time keeper	6
Millwright	1	Tinsmith	2
Molder	2	Tool maker	8
Nurse	2	Traveling salesman	1
Office boy	1	Unemployed	16
Oiler boy	2	Warp twister	1
Operative	75	Watchmaker	1
Packer	1	Weaver	22
Painter	1	Weigher	5
Pattern maker	5	Welder	1
Pattern weaver	4	Winder	1
Paymaster	2	Wool buyer	1
Percher	4	Wool sorter	5
Plumber	1	Yarn boy	5
Police officer	1		
Production clerk	2		
Repairman	4	Total	836

TRUSTEES OF THE LOWELL TEXTILE SCHOOL, 1916-17.
(Incorporated, 1895.)

HONORARY TRUSTEES

FREDERICK FANNING AYER, Esq., New York City.
CHARLES H. HUTCHINS, President, Crompton & Knowles Loom Works.

THE CORPORATION OFFICERS

A. G. CUMNOCK, *President* JAMES T. SMITH, *Clerk*
JOHN JACOB ROGERS, *Vice-President* CHARLES H. CLOGSTON, *Treasurer*

TRUSTEES

On the Part of the Commonwealth of Massachusetts

Ex Officiis

His Honor CALVIN COOLIDGE, DR. PAYSON SMITH,
Lieutenant Governor. *Commissioner of Education.*

Appointed by the Governor and Council

JOHN T. DONEHUE, Lowell, 1918. FREDERICK A. FLATHER, Lowell, 1920.
Treasurer Boott Mills.

On the Part of the City of Lowell

Hon. JAMES E. O'DONNELL, HUGH J. MOLLOY,
Mayor of Lowell. Superintendent of Public Schools.
FRANCIS A. WARNOCK,
President, Municipal Council.

By Appointment of the Lowell Textile Council

MICHAEL DUGGAN

PERMANENT TRUSTEES

ALEXANDER G. CUMNOCK, Lowell, Treasurer, Appleton Company, Boston corporation, mills at Lowell.
EUGENE S. HYLAN, Lowell, Treasurer, New England Bunting Company.
ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.
FREDERIC S. CLARK, Boston and North Billerica, President, Talbot Mills.
Hon. FREDERICK LAWTON, Boston, Justice, Superior Court.
JAMES T. SMITH, Lowell, Resident Trustee.
WALTER E. PARKER, Lawrence, Agent, Pacific Mills, Boston Corporation, mills at Lawrence.
WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Franklin, Uxbridge.
GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer.
FRANK E. DUNBAR, Lowell, Attorney at Law, and President, Appleton Company, Boston corporation, mills at Lowell.
HENRY A. BODWELL, Andover, Superintendent, Smith & Dove Manufacturing Company, class of 1900.

- WILLIAM R. MOORHOUSE, Boston Color Chemist, Cassella Color Company, class of 1901.
- CHARLES F. YOUNG, Lowell, Treasurer, Tremont and Suffolk Mills, Boston corporation, mills at Lowell.
- HON. JOHN JACOB ROGERS, House of Representatives, Washington, D. C.
- WILLIAM A. MITCHELL, Lowell, Agent, Massachusetts Cotton Mills, Boston corporation, mills at Lowell.
- EVERETT H. WALKER, Lowell, Agent, Lawrence Manufacturing Company, Boston corporation, mills at Lowell.
- ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.
- T. ELLIS RAMSDELL, Housatonic, Agent, Monument Mills, class of 1902.
- REGINALD A. WENTWORTH, Lowell, Superintendent, Saco-Lowell Shops, Lowell, Mass.
- CHARLES H. CLOGSTON, Treasurer, Mechanics Savings Bank, Lowell.

Additional Trustees Elected by Alumni Under Act of 1905

- For term ending June 30, 1917: ARTHUR C. VARNUM, class of 1906, Superintendent, Stirling Mills, Lowell, Mass.
- For term ending June 30, 1918: EDWARD M. ABBOT, class of 1904, Vice-President and Agent, Abbot Worsted Company, Graniteville, Mass.
- For term ending June 30, 1919: EDMUND A. LUCEY, class of 1904, Industrial Engineer, H. L. Gantt, New York City.
- For term ending June 30, 1920: ARTHUR J. HENNIGAN, class of 1906, Boston Representative for Cox and Schrieber, Commission Merchants of New York City.



GENERAL VIEW OF SCHOOL, MERRIMACK RIVER

BULLETIN

OF THE

Lowell Textile School

LOWELL, MASS.

Issued Quarterly

1918 - 1919

Entered August 26, 1902, at Lowell, Mass., as second class matter,
under Act of Congress of July 16, 1894.

Moody Street and Colonial Avenue

CALENDAR

FOR 1918

JANUARY

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FOR 1919

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CALENDAR

January—June, 1918

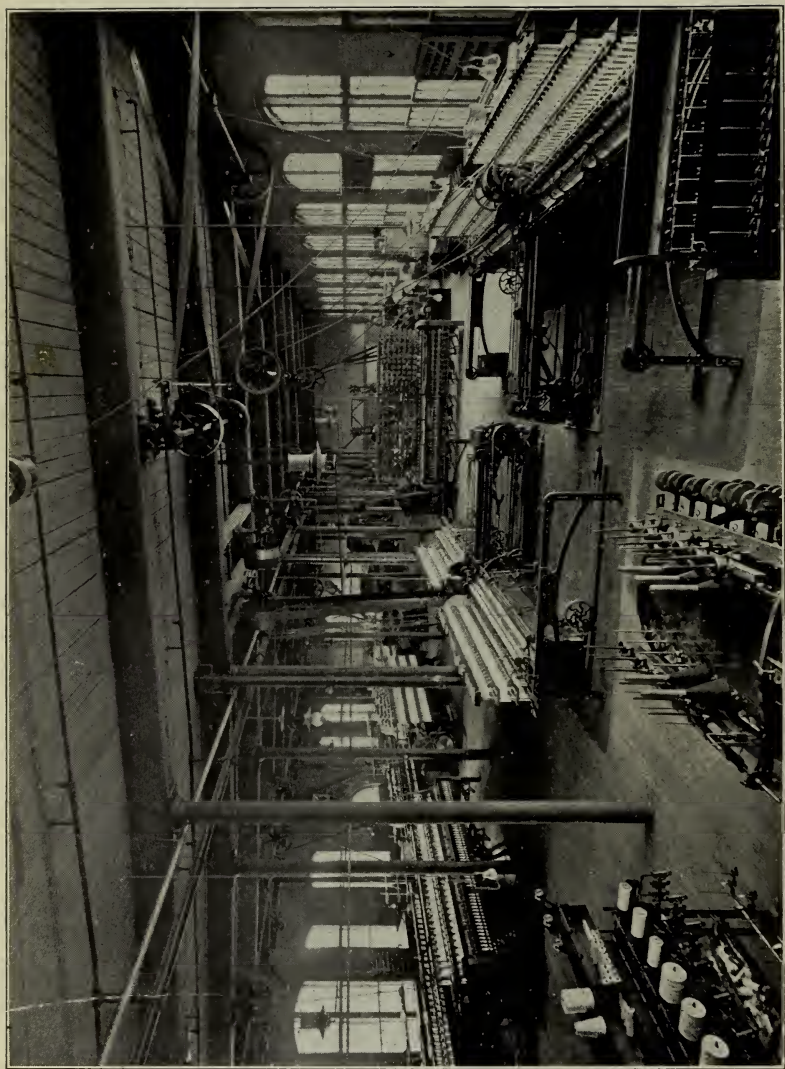
January 29, Tues.	Semi-annual examinations begin.
February 11, Mon.	SECOND TERM begins.
February 22, Fri.	Washington's Birthday—Holiday.
Mar. 5, Tues.	Annual examinations for evening classes commence.
March 16, Sat.	End of first five-week period of second term.
April 10, Wed.	Certificates awarded to Evening Graduates.
April 20, Sat.	End of second five-week period of second term.
April 18, Thurs. to April 20, Sat. inclusive	Recess.
May 27, Mon.	Final examinations begin.
May 30, Thurs.	Memorial Day—Holiday.
June 7, Fri.	Diplomas awarded to Day Graduates.
June 11-12, Tues and Wed., 9 A. M.	First entrance examinations.

September, 1918—June, 1919

September 3 and 4, Tues. and Wed. 9 A. M.	Second entrance examinations.
September 23, Mon.—9 A. M.	Re-examinations and examinations for advanced standing begin.
September 26, Thurs.—7 P.M.	Entrance examination for evening students begin. They will be held on Thursday evenings until opening of classes.
September 30, Mon.	DAY SCHOOL YEAR begins.
October 7, Mon.	Evening school year begins.
October 12, Sat.	Columbus Day—Holiday.
November 2, Sat.	End of first five-week period of first term.
November 27, Wed. to November 30, Sat. inclusive	Thanksgiving Recess.
December 7, Sat.	End of second five-week period of first term.
December 23, Mon. to January 1, Wed. inclusive	Christmas Recess.
January 27, Mon.	Semi-annual examinations begin.
February 10, Mon.	SECOND TERM begins.
February 22, Sat.	Washington's Birthday—Holiday.
February 25, Tues.	Annual examinations for evening classes commence.
March 15, Sat.	End of first five-week period of second term.
April 9, Wed.	Certificates awarded to Evening Graduates.
April 19, Sat.	End of second five-week period of second term.
April 17, Thurs. to April 19, Sat. inclusive	Recess.
May 26, Mon.	Final examinations begin.
May 30, Fri.	Memorial Day—Holiday.
June 6, Fri.	Diplomas awarded to Day Graduates.
June 10, and 11, Tues. and Wed. 9 A. M.	First entrance examinations.

September, 1919—January, 1920

September 9 and 10, Tues. and Wed. 9 A. M.	Second entrance examinations.
September 15, Mon.—9 A. M.	Re-examinations and examinations for advanced standing begin.
September 25, Thurs. 7 P. M.	Entrance examinations for evening students begin. They will be held on Thursday evenings until opening of classes.
September 29, Mon.	DAY SCHOOL YEAR begins.
October 6, Mon.	Evening school year begins.
October 13, Mon.	Holiday in observance of Columbus Day.
November 1, Sat.	End of first five-week period of first term.
November 26, Wed. to November 29, Sat. inclusive	Thanksgiving Recess.
December 6, Sat.	End of second five-week period of first term.
December 22, Mon. to January 2, Fri. inclusive	Christmas Recess.



COTTON YARN DEPARTMENT

Trustees of the Lowell Textile School

(Incorporated 1895)

Honorary Trustees

FREDERICK FANNING AYER
New York City

CHARLES H. HUTCHINS

President, Crompton and Knowles Loom Works, Worcester, Mass.

The Corporation

Officers, 1916

ALEXANDER G. CUMNOCK, President JAMES T. SMITH, Clerk
JOHN JACOB ROGERS, Vice-President CHARLES H. CLOGSTON, Treasurer

Trustees

On the part of the Commonwealth of Massachusetts

Ex Officiis

HIS HONOR CALVIN COOLIDGE
Lieutenant Governor

DR. PAYSON SMITH
Commissioner of Education

Appointed by the Governor and Council

JOHN T. DONEHUE, Lowell, 1918 FREDERICK A. FLATHER, Lowell, 1920
Treasurer, Boott Mills

On the part of the City of Lowell

Ex Officiis

HON. PERRY D. THOMPSON
Mayor of Lowell

HUGH J. MOLLOY
Superintendent of Public Schools

FRANCIS A. WARNOCK
President Municipal Council

By Appointment of the Lowell Textile Council
MICHAEL DUGGAN

Permanent Trustees

ALEXANDER G. CUMNOCK, Lowell, Treasurer, Appleton Company, Boston Corporation, mills at Lowell.

EUGENE S. HYLAN, Lowell, Treasurer, New England Bunting Company.

ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.

FREDERIC S. CLARK, Boston and North Billerica, President, Talbot Mills.

HON. FREDERICK LAWTON, Boston, Justice, Superior Court.

JAMES T. SMITH, Lowell, Resident Trustee.

WALTER E. PARKER, Lawrence, Agent, Pacific Mills, Boston Corporation, mills at Lawrence.

WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Franklin, Uxbridge.

GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer. FRANK E. DUNBAR, Lowell, Attorney-at-Law, and President, Appleton Company, Boston Corporation, mills at Lowell.

HENRY A. BODWELL, Andover, Superintendent, Smith and Dove Manufacturing Company, class of 1900.

WILLIAM R. MOORHOUSE, Boston, Color Chemist, Cassella Color Company, class of 1901.

CHARLES F. YOUNG, Lowell, Treasurer, Tremont and Suffolk Mills, Boston Corporation, mills at Lowell.

HON. JOHN JACOB ROGERS, House of Representatives, Washington, D. C.

WILLIAM A. MITCHELL, Lowell, Agent, Massachusetts Cotton Mills, Boston Corporation, mills at Lowell.

EVERETT H. WALKER, Lowell, Agent, Lawrence Manufacturing Company, Boston Corporation, mills at Lowell.

ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.

T. ELLIS RAMSDELL, Housatonic, Agent, Monument Mills, class of 1902.

REGINALD A. WENTWORTH, Lowell, Superintendent, Saco-Lowell Shops, Lowell, Mass.

CHARLES H. CLOGSTON, Treasurer, Mechanics Savings Bank, Lowell.

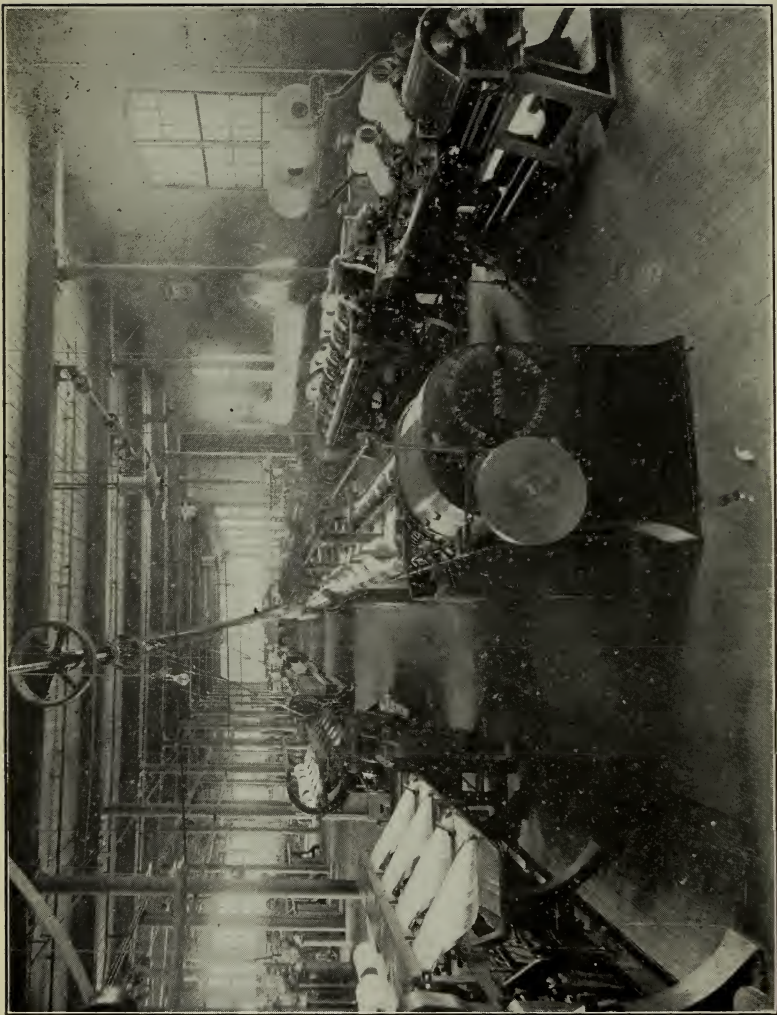
Additional Trustees Elected by Alumni Under Act of 1905

For term ending June 30, 1918: Edward M. Abbot, class of 1904, Vice-President and Agent, Abbot Worsted Co., Graniteville, Mass.

For term ending June 30, 1919: Edmund A. Lucey, class of 1904, Industrial Engineer, H. L. Gantt, New York City.

For term ending June 30, 1920: Arthur J. Hennigan, class of 1906, Boston Representative for Cox & Schrieber, Commission Merchants of New York City.

For term ending June 30, 1921: James F. Dewey, class of 1904, Superintendent, A. G. Dewey Co., Quebec, Vt.



COTTON COMBING

GENERAL COMMITTEES

FINANCE

ALEXANDER G. CUMNOCK, Chairman
ARTHUR G. POLLARD FREDERICK A. FLATHER
CHARLES F. YOUNG JAMES T. SMITH
CHARLES H. CLOGSTON

BUILDINGS AND LEGISLATIVE

ALEXANDER G. CUMNOCK, Chairman
FREDERIC C. CLARK WILLIAM A. MITCHELL · JOHN J. ROGERS
HENRY A. BODWELL ARTHUR G. POLLARD JAMES T. SMITH
FREDERICK A. FLATHER

WAYS AND MEANS

JAMES T. SMITH, Chairman JOHN T. DONEHUE
FREDERIC S. CLARK WALTER E. PARKER
ROYAL P. WHITE

LECTURES

JAMES T. SMITH, Chairman HENRY A. BODWELL
JOHN J. ROGERS REGINALD A. WENTWORTH
FREDERIC S. CLARK

DEPARTMENT COMMITTEES

Cotton Yarns and Knitting

CHARLES F. YOUNG, Chairman EVERETT H. WALKER
T. ELLIS RAMSDELL FREDERICK A. FLATHER

Woolen and Worsted Yarns

WALTER E. PARKER, Chairman GEORGE E. KUNHARDT
ARTHUR J. HENNIGAN JAMES F. DEWEY

Chemistry and Dyeing

WILLIAM R. MOORHOUSE, Chairman FREDERIC S. CLARK
EUGENE S. HYLAN WILLIAM A. MITCHELL

Decorative Art

JAMES T. SMITH, Chairman FREDERICK LAWTON

Designing, Weaving and Finishing

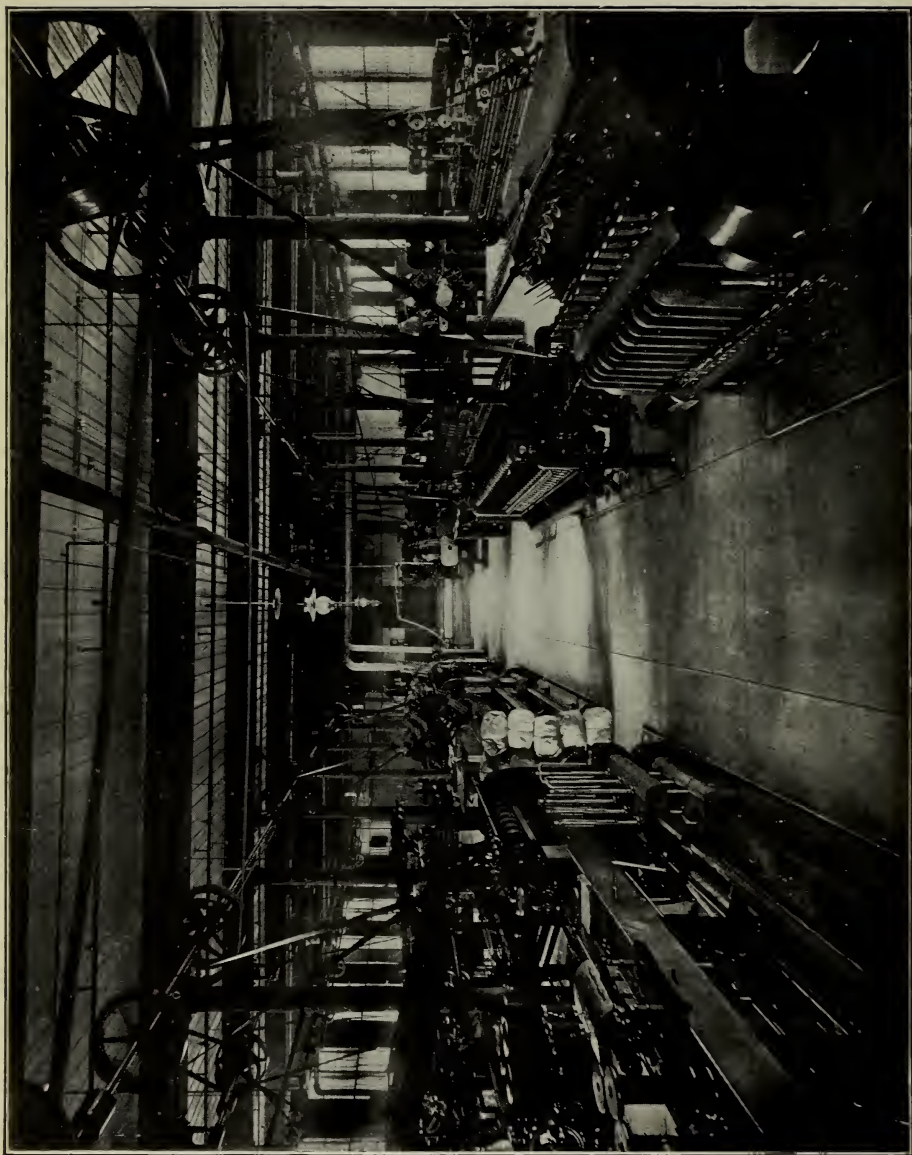
FREDERIC S. CLARK, Chairman ROYAL P. WHITE
GEORGE E. KUNHARDT ARTHUR G. POLLARD

Mechanical and Electrical Engineering

HENRY A. BODWELL, Chairman JAMES T. SMITH
REGINALD A. WENTWORTH

Athletics and Grounds

JAMES T. SMITH, Chairman
WILLIAM R. MOORHOUSE ROYAL P. WHITE
EDWARD M. ABBOT



WOOLEN AND WORSTED YARN DEPARTMENT

OFFICERS OF ADMINISTRATION AND INSTRUCTION

ADMINISTRATION

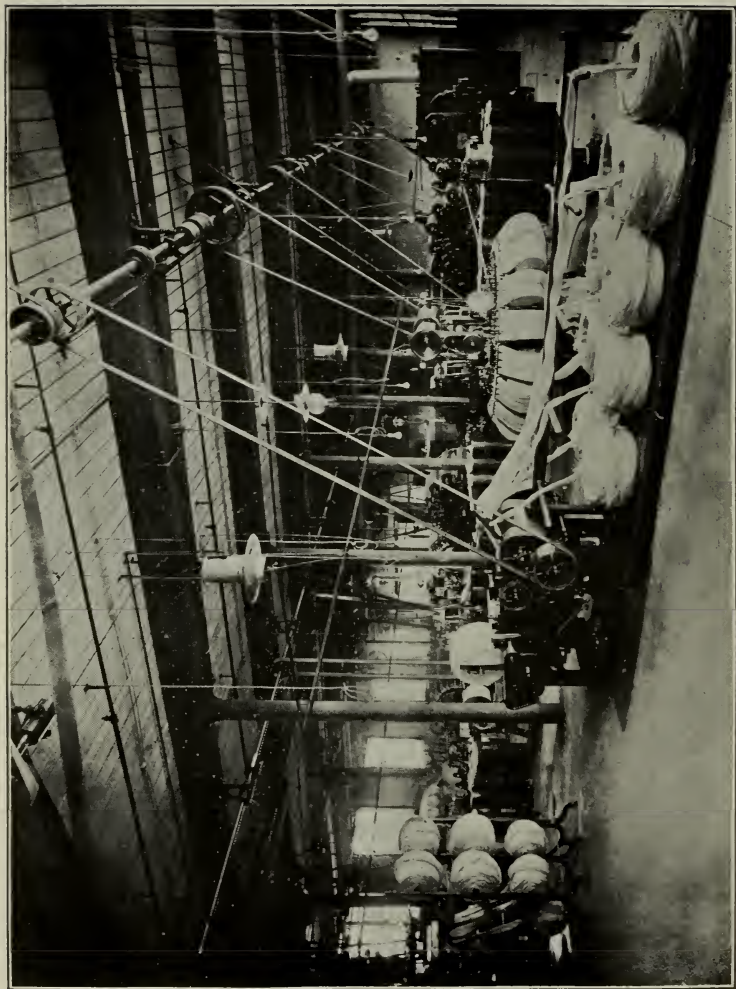
CHARLES H. EAMES, S. B., Principal of the School	
WALTER B. HOLT, Bursar	FLORENCE M. LANCEY, Librarian
STELLA F. MORRILL, Registrar	RENA J. LANDERS, Secretary

CHIEFS OF DEPARTMENTS

LOUIS A. OLNEY, S. B., M. S.,	Professor of Chemistry; in charge of Department of Chemistry and Dyeing
EDGAR H. BARKER,	In charge of Department of Woolen and Worsted Yarns
GEORGE H. PERKINS, S. B.,	In charge of Department of Textile Engineering
ARTHUR A. STEWART,	In charge of Department of Finishing
STEPHEN E. SMITH,	In charge of Department of Cotton Yarns and Knitting
HERMANN H. BACHMANN,	In charge of Department of Textile Design and Power Weaving
LESTER H. CUSHING, A. B.,	In charge of Department of Languages, History and Economics.

INSTRUCTORS

*JOHN N. HOWKER,	Instructor in Wool Sorting and Scouring
STEWART MACKAY,	Instructor in Textile Design and Cloth Analysis
ROBERT R. SLEEPER,	Instructor in Dyeing
HERBERT J. BALL, S. B., B. C. S.,	Instructor in Mechanical and Efficiency Engineering and Accounting
ULYSSES J. LUPIN, S. B.,	Instructor in Mathematics, Physics and Electrical Engineering
HOWARD D. SMITH, PH. D.,	Instructor in Quantitative Analysis



WOOL COMBING

INSTRUCTORS—CONTINUED

RUSSELL B. STODDARD, A. B.,	Instructor in Organic Chemistry
CHARLES H. JACK,	Instructor in Machine Shop Practice
ANDREW YOUNGER,	Instructor in Weaving
C. LEONARD GLEN,	Instructor in Finishing
MARTIN HOELLRICH,	Instructor in Weaving
DAVID B. MOREY, A. B.,	Instructor in Physical Culture
ARTHUR K. JOHNSON, S. B.,	Instructor in Chemistry
GUY E. BRANCH,	Instructor in Woolen and Worsted Yarns
EDWARD K. HULL,	Instructor in Mechanical Drawing and Mechanism
ELMER E. FICKETT, B. S.,	Instructor in General Chemistry and Qualitative Analysis.
JOHN C. LOWE,	Evening Instructor in Woolen and Worsted Yarns
LOUIS C. PLAYDON,	Evening Instructor in Cotton Yarns
E. ELIZABETH WHITNEY,	Evening Instructor in Freehand Drawing
GEORGE GOODCHILD,	Evening Instructor in Cotton Yarns
EDITH C. MERCHANT,	Evening Instructor in Freehand Drawing
ARCHIBALD R. GARDNER, M. D.,	Medical Adviser

*Leave of absence to serve in Quartermasters Department U. S. A., for duration of War.

STUDENT ASSISTANTS

GILBERT R. MERRILL,	Cotton Yarns Department
RAYMOND R. STEVENS,	Chemistry and Dyeing Department
ARTHUR J. ANDERSON,	Chemistry and Dyeing Department

FACULTY

Principal and Chiefs of Departments



DECORATIVE ART

THE LOWELL TEXTILE SCHOOL

The Lowell Textile School was established, and is managed, by the Trustees of the Lowell Textile School of Lowell, Massachusetts, "for the purpose of instruction in the theory and practical art of textile and kindred branches of industry," as set forth in the act of incorporation.

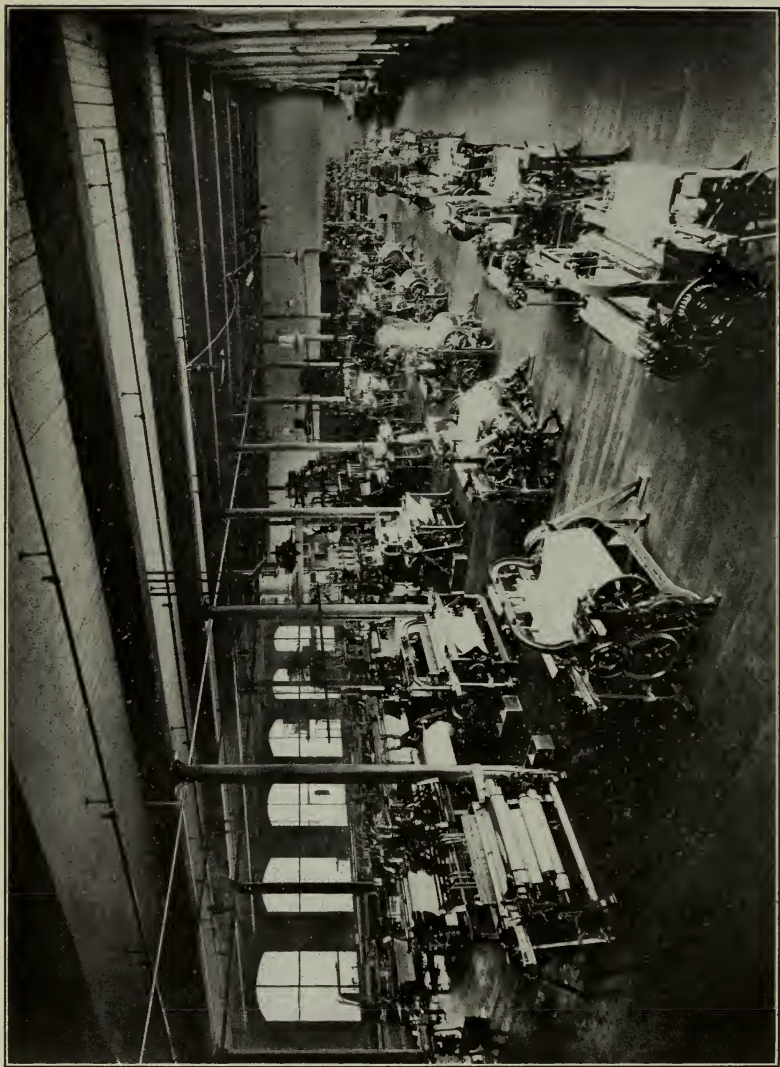
The movement for the establishment of the School dates from June 1, 1891, but it was not opened for instruction until February 1, 1897.

Not only did the normal progress of the textile industry require such a school, but through the rapid development of the manufacture of the coarser cotton fabrics in the southern states, a crisis had arrived in the leading industry of New England which could only be met by wider and more thorough application of the sciences and arts for the production of finer and more varied fabrics.

Modeled on the lines of the departments of the higher Polytechnic Institutes, it offers thorough instruction in the elements and principles of the sciences and arts applicable to textile and kindred branches of industry. Its courses of instruction treat of the application of these principles in the processes and machinery required in the manufacturing of all varieties of textile fabrics.

In industrial education the distinction between Trade and Technical Industrial Schools is coming to be understood. The Lowell School belongs to the latter class. Beginning with limited equipment, instructing staff, and means, instruction at first was by Mill or Trade school methods—the pupil was brought directly to the machine, its parts and operation in manufacturing explained to him. The curriculum was, however, rapidly extended, as contemplated in the original plan, department after department opened and equipped, and commodious and well adapted buildings provided for a permanent home.

While the progress of invention and the demands of ever changing markets will compel constant improvement in methods and additions to the very extensive equipment, the period of



WEAVE ROOM

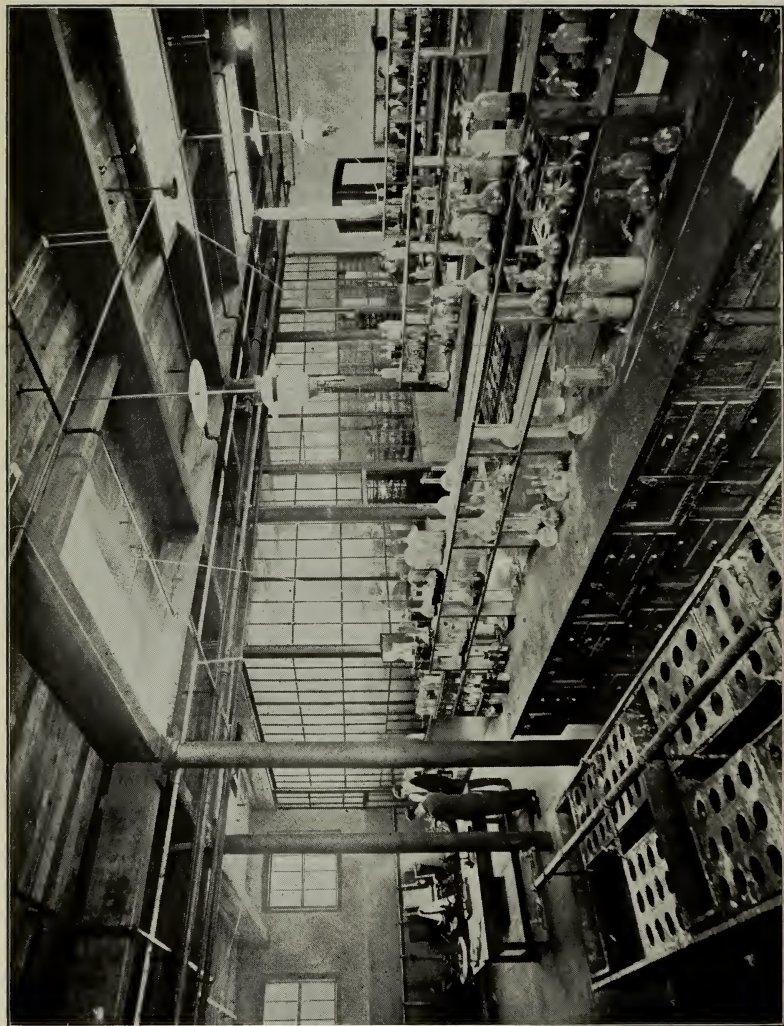
establishment is substantially closed. All departments are open for instruction in all branches of the textile art under extensive and able corps of instructors.

Of the incorporators the permanent trustees (limited to twenty) are mainly representatives, as president, treasurer, agent, or superintendent, of the management of great textile or textile machine corporations of the Commonwealth. Associated with them *ex officio*, are His Honor, the Lieutenant Governor and the Commissioner of the State Board of Education, together with two trustees appointed for four-year terms by the Governor and Council. The Mayor, the President of the Municipal Council, the Superintendent of School, and a representatives of the textile council of the city of Lowell are also members. At the session of 1905 the Legislature authorized the graduates of the school to elect two additional trustees, and by an act of 1906 the number was increased to four for four-year terms, one being elected each year. By the terms of the by-laws at least three-fourths of the permanent trustees must be persons "actually engaged in or connected with textile or kindred manufactures."

Lowell, Massachusetts, is called the "Mother Textile City of America," and in locating the school at this centre a considerable advantage is secured for the reason that every commercial fibre is utilized in the products of the great Merrimack Valley Textile district. The practical work of the school is therefore kept closely in touch with the several branches of the industry which are included in the course of study.

His Excellency, Governor Roger Wolcott, formally opened the school on January 30, 1897, and there was present a large gathering of men representing New England's textile industries. The regular classes of the school were opened on February 1, 1897, and have been regularly conducted since that time.

On January 1, 1903, the School was transferred from the rented quarters that it had occupied for five years to the site and building where it is permanently located. On February 12, 1903, his Excellency, Governor John L. Bates, in the presence of a large number of guests representing the Legislature as well as the educational, textile, and commercial interests of the Commonwealth, dedicated the present buildings.



EXPERIMENTAL DYEING LABORATORY

The site is a commanding one, consisting of about fifteen acres at a high elevation, on the west bank of the Merrimack River. It extends to and overlooks the rapids of Pawtucket Falls which was the first water power in America to be used on an extensive scale to operate power looms. It was contributed by Frederick Fanning Ayer, Esquire, of New York City, and the Proprietors of the Locks and Canals on the Merrimack River. The buildings consist of Southwick Hall, Kitson Hall, the Falmouth Street Building, Colonial Avenue Laboratories, and a power plant located east of the Falmouth Street Building.

Southwick Hall was contributed by the Commonwealth of Massachusetts and Frederick Fanning Ayer, Esquire, of New York City, and is a memorial to Royal Southwick, a leading textile manufacturer, a public man of earlier days, and a maternal ancestor of Mr. Ayer. It includes a central mass 90 x 90 ft., having three stories and two wings 80 x 85 ft. each with two stories and well lighted basements. The building is pierced in the center by an arched way from which access is had to the wings and to the central courtyard. The northern wing is occupied by the General Offices, Engineering and Finishing Departments, and Library, while the southern wing is entirely occupied by the Chemistry and Dyeing Departments.

Kitson Hall, dedicated to the memory of Richard Kitson was contributed by Charlotte P. Kitson and Emma K. Stott, his daughters; the Kitson Machine Company of Lowell, founded by Mr. Kitson, was also a generous contributor.

This hall makes a right angle with Southwick Hall, is 60 feet by 252 feet and has one story and a basement. The first floor is occupied by the Cotton Yarn and Knitting Departments, while the basement contains the Mechanical and Electrical Engineering Laboratories and the Machine Shop. During the summer of 1917 a second story was added to provide room for classes in Mechanical Drawing and Knitting. This was made possible by an appropriation from the Commonwealth.

The Falmouth Street Building forms the third side of the quadrangle and consists of three portions, one 60 x 75 ft., three stories, one 75 x 130 ft., three stories, and the head house 70 x 80 ft., three stories and basement. The building is occupied by



ORGANIC CHEMISTRY LABORATORY

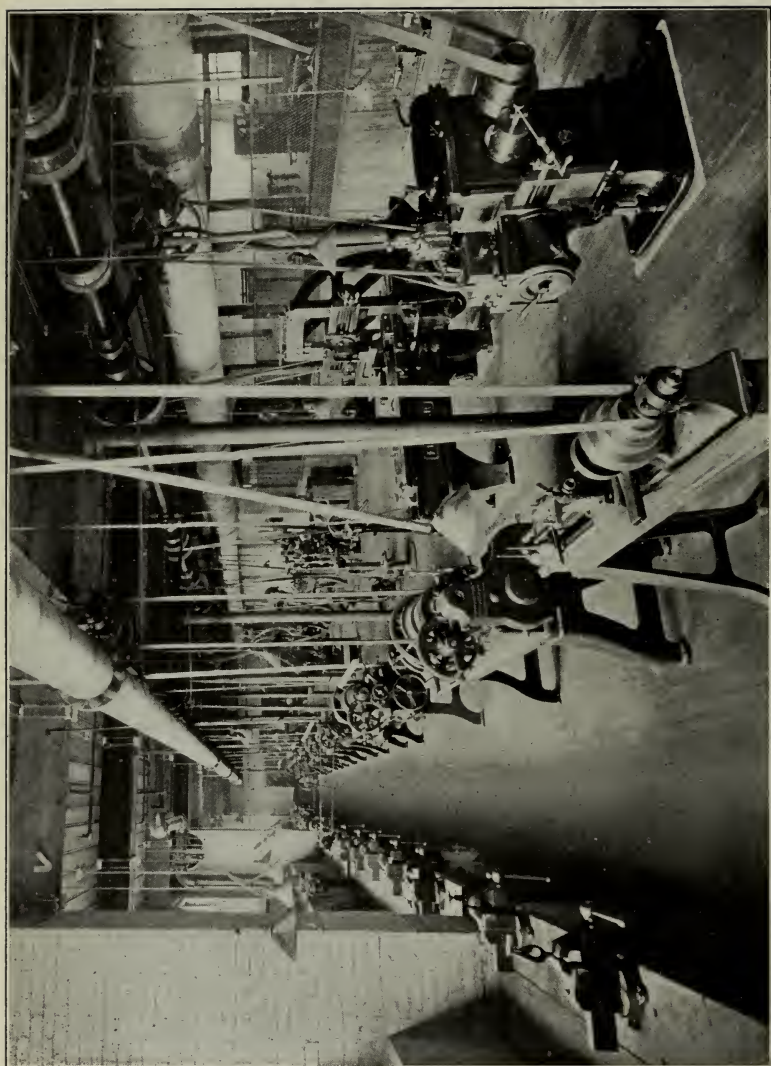
the picker section of the Cotton Yarn Department, the Design and Power Weaving Department and by the Woolen and Worsted Yarn Department, and contains on the lower floors an equipment for the manufacture of wool yarn from the fleece to the finished yarn spun by either the English or French systems. The upper floors are occupied by a great variety of plain, dobby and Jacquard looms and a section of the building is occupied by the Students' Lockers and Recreation Rooms.

Colonial Avenue Building was erected in the summer of 1910 from plans prepared by the Engineering Department. The work of construction was also in charge of the engineers of this department. The building completes the fourth side of the quadrangle and in outward appearance corresponds to the architectural features of the other school buildings. It is a single story building and has the dimensions of 195 x 60 ft. Its interior is faced with cement brick made at the school during the progress of the work. These serve to give light reflecting walls which are advantageous for the work of the Wool Manufacturing, Cotton Finishing and Chemistry and Dyeing Departments that occupy this building. The funds for this building were provided by the state of Massachusetts.

The buildings are all faced on the exterior with light brick with granite and Indiana limestone trimmings. They are of modern mill construction adapted to educational uses. The floor space of the several departments is as follows:

Cotton Yarns and Knitting	16,200 sq. ft.
Woolen and Worsted Yarns	28,160 " "
Textile Design and Decorative Art	16,806 " "
General Chemistry and Dyeing Laboratories	28,400 " "
Finishing Cotton, Woolen and Worsted	10,606 " "
Power Weaving	15,360 " "
Textile Engineering	24,297 " "
Power Plant	10,047 " "
Assembly and Physical Culture Halls	10,800 " "
Entrances, corridors, stairways, etc.	14,487 " "

The additional floor space is devoted to Administration Offices, Library, Assembly Halls, Class Rooms, Store Rooms, etc.



MACHINE SHOP

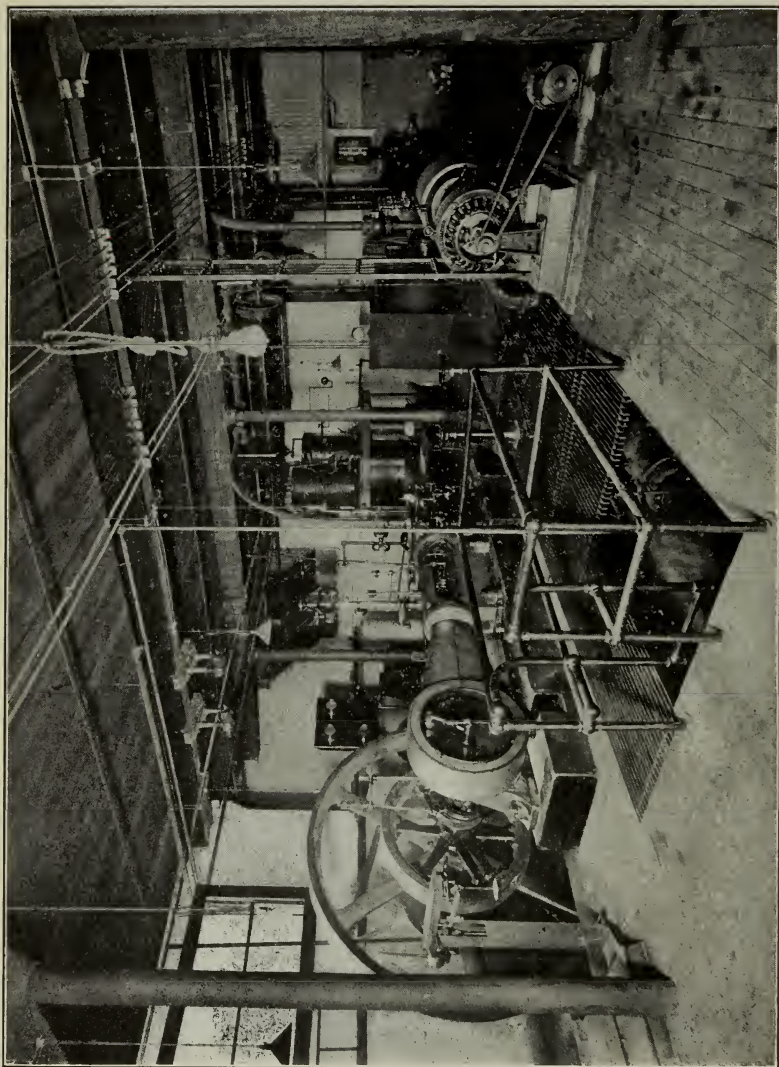
Though from the first the management has kept in view the clearly defined objective which called for the establishment of the school, to meet the needs of the textile and kindred industries, it has developed its curriculum, its methods of instruction, and equipment as those needs arose. At this writing its chemical and dyeing, decorative art, design, yarn and weaving departments are liberally housed, equipped, and provided with able instructors for the highest efficiency, though additional floor space is required and is being provided as the roster of pupils increases. This objective will be kept constantly in view and as new demands are presented an effort will be made to extend courses, equipment and floor space.

The mechanical equipment of the school includes the best makes of textile machinery, and these machines, while built as they would be for regular work, are, as far as possible, adapted to the experimental work which is of particular value in such an institution as this. There is a more varied equipment in this school than in any other, either in America or Europe, and it is now possible to convert the raw stock into the finished fabric, within the school.

The day classes have been organized for those who can devote their entire time for three or more years to the instruction requisite in preparing to enter the textile industries. It has been found necessary to require of all such students educational qualification equivalent to those given by a regular four-year course of a high school or academy of good standing.

The evening classes are held for about twenty weeks of the year and are for those who are unable to attend the day courses. These are similar to the day courses, but are aimed especially to meet the needs of students working during the day in the mills and shops. For entrance to these classes an applicant should have the equivalent of a grammar school education.

The school has so advanced in the standard and character of its work, as well as the standard for admission to its day classes, that the Legislature of the State of Massachusetts granted to the school the power to confer degrees of Bachelor of Textile Engineering (B. T. E.) and Bachelor of Textile Chemistry (B. T. C.) upon those students who satisfactorily complete one of the prescribed four-year courses.



ENGINEERING LABORATORY

The growth of the school has been constant, as is evident from the fact that when it was opened February 1, 1897, there were 32 day and 110 evening pupils. January 1, 1918, the roster showed 117 day pupils and 754 evening pupils or 871 in all.

The decrease in registration January, 1918, compared with 1917 is easily explained by the fact that 70 students from the day classes entered the United States service and are serving their country in the war. This does not take into account the students who have entered the service who otherwise would have entered the school this year.

EQUIPMENT

The equipment of machinery, inventoried July 1, 1917, at \$284,226.98, is most varied for textile educational purposes and is being constantly augmented. The builders of the various machines installed keep in close touch with the school, adding to the machines such improvements as are made from time to time, and each year some new machine will be added by a manufacturer who finds it to his advantage to be represented here. This operates to mutual advantage of student and manufacturer.

COTTON YARNS DEPARTMENT

Ginning

- One 50 saw gin made by Daniel Pratt Gin Co., Prattsville, Ala.
- One Prior Roller Gin.

Opening, Picking and Waste Machinery

An outfit of Kitson Picking Machinery from works of Saco-Lowell Shops, Lowell, Mass., including:

- One 40 in. Two Beater Breaker Lapper with automatic feeder.
- One 40 in. Single Beater Intermediate Finisher Lapper with Perham & Davis Sectional Plate Evener, apron to double four laps.
- One 40 in. Single Beater Finisher Lapper with Perham & Davis Sectional Plate Evener, apron to double four laps, Kirschner Patent Carding Beater.
- One Roving Waste Opener.
- One Thread Extractor.

The power for this picker section is furnished through a Westinghouse 15 h. p. 220 volt direct current motor.



ATHLETIC FIELD AND SCHOOL BUILDINGS

Carding, Combing and Dyeing

The following machinery made by the Saco-Lowell Shops, Lowell, Mass.

One Top Flat Card. Two Drawing Frames.

Three Revolving Flat Cards. Stripping Rolls, etc.

Two Railway Heads.

Two of these cards form a unit of a waste carding equipment.

One of these cards is equipped with Chapman Electric Neutralizer, made by the Chapman Electric Neutralizer Co., Portland, Me.

From the Whitin Machine Works, Whitinsville, Mass.

One 40 in. Revolving Flat Card. One Six Head Ribbon Lapper.

Card Grinding Rolls. One Four Head Ribbon Lapper.

One Sliver Lapper. One Two Head Comber.

One Eight Head High Speed Comber. One Six Head Comber.

From the Mason Machine Works, Taunton, Mass.

One Sliver Lap Machine and One Comber.

From John Hetherington & Sons, Ltd., Manchester, Eng.

One Two Head Comber and One Model Comber Head.

Roving, Spinning and Twisting

From Saco-Lowell Shops, Lowell, Mass.

One Slubber for waste spinning unit.

One Slubber. Three Ring Spinning Frames.

One Intermediate. One Spinning Mule.

One Fine Frame. One Spooler.

One Jack Frame. One Wet and Dry Twister.

Two of the Spinning Frames are direct driven by A. C. motors.

From Fales & Jenks, Pawtucket, R. I.

One Wet and Dry Twister.

From Draper Company, Hopedale, Mass.

One Wet and Dry Twister.

From Whitin Machine Works, Whitinsville, Mass.

Three Ring Spinning Frames.

From Woonsocket Machine and Press Co., Woonsocket, R. I.

One Intermediate Fly Frame.

From Asa Lees Co., Oldham, England, Wm. Firth Company, Agents.

One Mule for fine spinning.

Miscellaneous Machinery of this Department includes:

From the Saco-Lowell Shops, Lowell, Mass.

One Reel and models of each of the following:

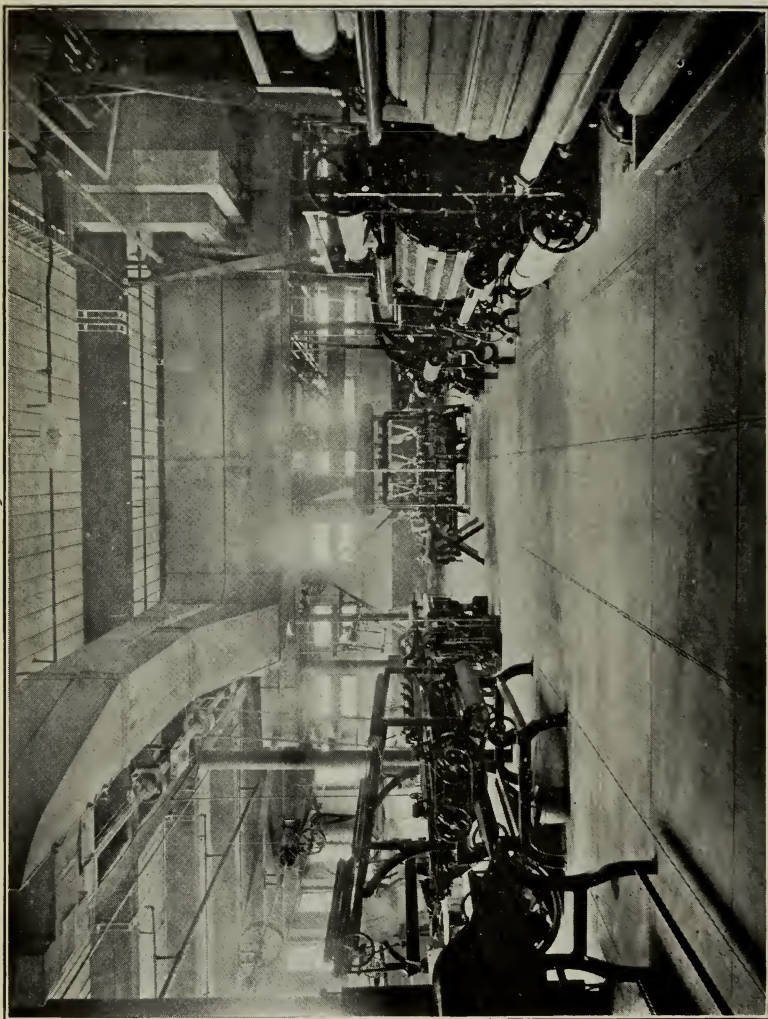
Fine Fly Frame. Card Feed.

Fly Frame Compound. Flat Grinding Device.

Scroll Setting Device.

From Draper Company, Hopedale, Mass.

One Weeks Banding Machine and One Moscrop Single Thread Testing Machine.



FINISHING DEPARTMENT

Miscellaneous Machines.

One Yarn Inspection Machine with blackboards.

Two Barber Knotters.

One Power Yarn Tester.

Two Yarn Reels and Grain Scales.

One Twist Counter.

From Howard Brothers, Worcester, Mass.

Two Exhibition Boards. One of Hand Cards and one of Card Clothing.

The power for this department is furnished through:

One 10 h. p. and one 15 h. p. Allis Chalmers motors.

Knitting Department Equipment

Winding Machinery

One Universal Winder 6 spindles for cones and tubes.

One Payne Bobbin Winder.

One Foster Winder 10 spindles for cones and tubes.

Hosiery Machines

One Acme full automatic $3\frac{3}{4}$ in. cyl. 160 needles.

One Acme full automatic $3\frac{3}{4}$ in. cyl. 200 needles.

One Mayo Model A full automatic $3\frac{3}{4}$ in. cyl. 120 needles.

One Mayo Model A full automatic $3\frac{3}{4}$ in. cyl. 200 needles.

One Mayo Model C full automatic $3\frac{3}{4}$ in. cyl. 220 needles.

One Scott & Williams new automatic $3\frac{3}{4}$ in. cyl. 176 needles

One Scott & Williams Model G $3\frac{3}{4}$ in. cyl. 220 needles.

One Banner full automatic $3\frac{3}{4}$ in. cyl. 200 needles.

One Brinton full automatic $3\frac{3}{4}$ in. cyl. 176 needles.

One Branson hand machine, $3\frac{1}{2}$ in. cyl. 80 needles.

Machines in this group are equipped with special attachments for producing lace front work high splicing double soling and striped work.

One Wildman Ribber $3\frac{3}{4}$ in. cyl. 160 needles.

One Wildman Ribber $3\frac{3}{4}$ in. cyl. 176 needles.

One Wildman Fancy Ribber $3\frac{3}{4}$ in. cyl. 200 needles.

One Wildman Ribber $3\frac{1}{2}$ in. cyl. 220 needles.

One Wildman Striping Ribber $5\frac{1}{4}$ in. cyl. 240 needles.

One Brinton Ribber $3\frac{3}{4}$ in. cyl. 176 needles.

One Brinton Ribber $3\frac{3}{4}$ in. cyl. 200 needles.

One Brinton Tie Machine $1\frac{3}{4}$ in. cyl. 100 needles.

Underwear Machinery

One Crane Spring Needle Machine 19 in. cyl. 1040 needles.

One Scott & Williams Ribber 19 in. cyl. 12 cut.

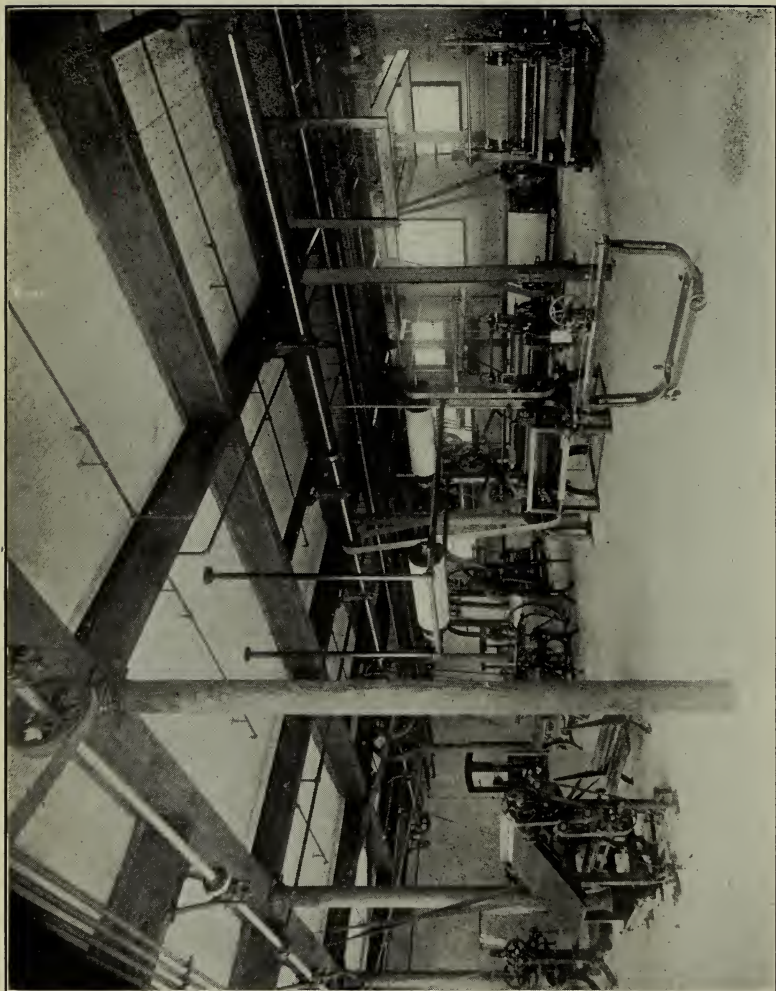
One Wildman Ribber 20 in. cyl. 8 cut.

Flat Machines

One Lamb glove machine 8 in. bed 6 cut.

One Lamb Knitting Machine 18 in. bed 5 cut.

One Lamb Sweater Machine 24 in. bed 4 cut.



COTTON FINISHING

One Grosser Sweater Machine 32 in. bed 3 cut.
One Grosser Jacquard Machine 16 in. bed 10 cut.
One Dubied Scarf Machine 18 in. bed 18 cut.

Finishing Machines

One Grosser 2 thread looper 22 point. One Beattie looper 16 point.
One Hepworth looper 16 point One Beattie looper 3 point.
Five Union Special Sewing Machines for Overseaming, Double Stitch
Covering, Seaming and Welting and Vest Finishing.
Six Merrow Sewing Machines including two shell stitch machines
and three overseaming and crocheting machines.
Three Singer Machines for plain sewing, buttonholing and button
sewing.

The power for this department is supplied through a 7½ h. p. 220
volt Westinghouse motor.

WOOLEN AND WORSTED DEPARTMENT

Wool Sorting and Grading

For sorting wool in a convenient manner this department is thoroughly
equipped with benches, baskets, etc., and in addition there are samples of
all grades and types of wool and other fibres.

Scouring and Carbonizing

Wool Scouring Machinery, C. G. Sargents' Sons Corp., Graniteville,
Mass., consisting of

Cone Duster for Grease Wool.

Two Scouring Bowls, each 17 ft. x 24 in., with Parallel Rakes and
Automatic Feeder.

One Single Apron Dryer with Automatic Feeder.

Carbonizing Screw Acid Tank.

Duster with Crush Rolls.

From North Chelmsford Machine Co.

One Rinse Box.

From Schaum & Uhlinger, Philadelphia, Pa.

One Hydro-Extractor.

From C. S. Dodge, Lowell, Mass.

One Shoddy Picker and One Bagging Stand.

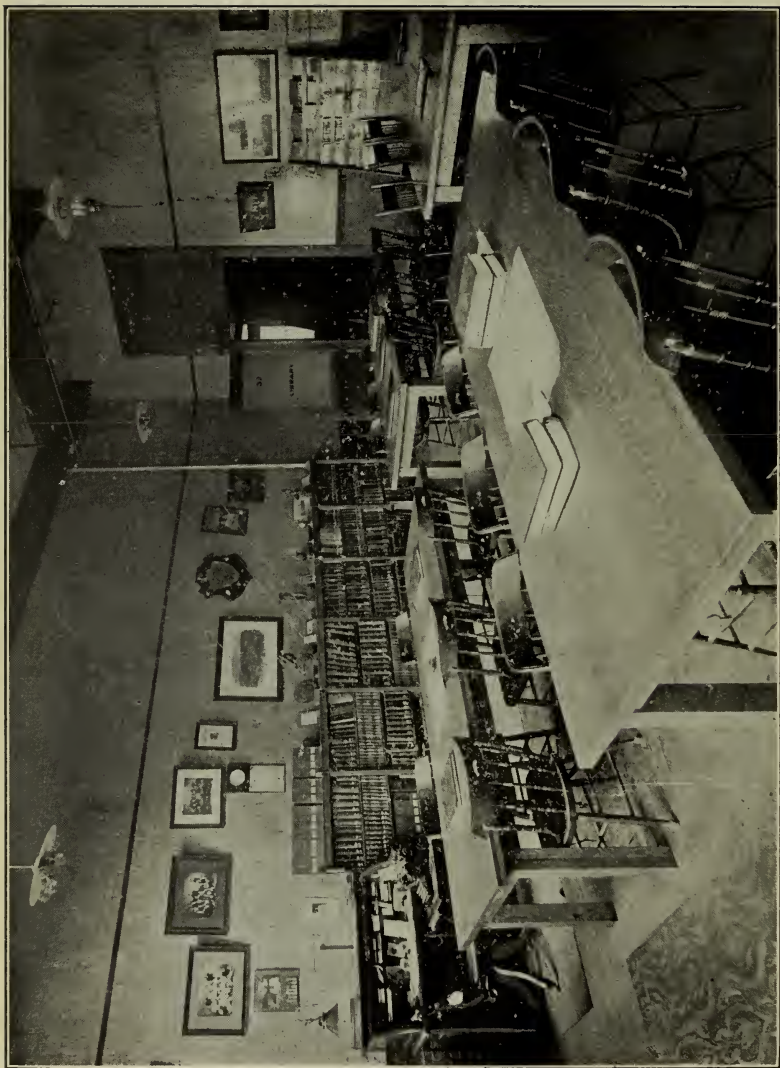
The power for this department is supplied through a 20 h. p. General
Electric 220 volt motor.

Woolen

Picking

One Parkhurst Burr Picker, Atlas Mfg. Co., Newark, N. J.

One Mixing Picker, Davis & Furber Machine Co., North Andover,
Mass., equipped with Improved Mixing Picker Feed, and Spencer
Oiler, both made by George S. Harwood & Son, Boston, Mass.



LIBRARY

Carding

One set of Woolen Cards, including :

First Breaker, Second Breaker and Finisher, Davis & Furber Machine Co., North Andover, Mass.; this set of cards equipped with Bramwell First Breaker Feed (George S. Harwood & Son, Boston, Mass.); Torrance Balling Head and Creel, (Torrance Mfg. Co., Harrison, N. J.) between First Breaker and Second Breaker; Apperly Feed (George S. Harwood & Son, Boston, Mass.) between Second Breaker and Finisher, and Combination Rub Rolls and Apron Condenser, (Davis & Furber Machine Co., North Andover, Mass.), on Finisher. These cards are for medium or coarse work.

One set Davis & Furber Woolen Cards, including :

First Breaker, Second Breaker and Finisher. This set of cards equipped with Bramwell First Breaker Feed, (George S. Harwood & Son, Boston, Mass.); Apperly Feed with Kemp Traveller, (George S. Harwood & Son, Boston, Mass.), between First Breaker and Second Breaker; Bates Feed (E. V. Bates, Lowell, Mass.), between second Breaker and Finisher, and Davis & Furber Double Apron Condenser, on Finisher. These cards are for fine work.

Both sets of cards are equipped with Chapman Electric Neutralizer, made by Chapman Electric Neutralizer Co., Portland, Me.

One Sample Mixing Card, Torrance Mfg. Co., Harrison, N. J.

Spinning

One Spinning Mule, 120 spindles, Davis & Furber Machine Co., North Andover, Mass.; Bobbin Holders, supplied by American Bobbin Holder Co., W. Medway, Mass.

One Spinning Mule, 120 spindles, Johnson & Bassett, Worcester, Mass.; Bobbin Holders supplied by Murdock & Geb, Franklin, Mass.

One 1907 Fancy Yarn Twister, 20 spindles, Davis & Furber Machine Co., North Andover, Mass.

Card Grinding

One Roy Grinding Frame, B. S. Roy & Son, Worcester, Mass.

Two Roy Traverse Grinders, B. S. Roy & Son, Worcester, Mass.

One Entwistle Traverse Grinder, T. C. Entwistle Co., Lowell, Mass.

One Complete set of Carder's Tools, W. H. Brown, Worcester, Mass.

Worsted

Carding

One 50-inch Double-cylinder Worsted Card (4 lickerin), Davis & Furber Machine Co., North Andover, Mass., equipped with Bramwell Feed, George S. Harwood & Son, Boston; also equipped with a Chapman Electric Neutralizer, Chapman Electric Neutralizer Co., Portland, Me.

Backwashing

One Double Bowl, Five Cylinder Backwasher, with Gill Box, Taylor-Wadworth & Co., Leeds, Eng., equipped with blueing motion, oiling motion, and Layland Patent pressure motion.

Gilling

One Doubling Balling Head Gill Box (with double screws), Saco-Lowell Shops, Lowell, Mass.

One Weigh Gill Box and Creel, Saco-Lowell Shops, Lowell, Mass.

Combing

One Baller, (punch), Crompton & Knowles, Worcester, Mass.

One Noble Worsted Comb, Crompton & Knowles, Worcester, Mass.

Gilling

One Finishing Can Gill Box, Hall & Stell, Keighley, England.

One Finishing Balling Head Gill Box, Hall & Stell, Keighley, England.

Bradford System of Drawing, Spinning and Twisting

The following Drawing, Spinning and Twisting Machinery, from Prince Smith & Son, Keighley, England.

One Revolving Creel for 12 Balls.	One Double Head Can Gill Box.
One 2 Spindle Drawing Box.	One 2 Spindle Gill Box.
One 2 Spindle Weigh Box.	One 12 Spindle Flyer Spinner.
One 4 Spindle First Finisher.	One 12 Spindle Ring Spinner.
One 12 Spindle Dandy Reducer.	One 12 Spindle 2 Fold Cap Twister.
One 12 Spindle Cap Spinner.	One 12 Spindle 6 Fold Ring Twister.

The following Drawing, Spinning and Twisting Machinery from the Saco-Lowell Shops, Lowell, Mass

One 2 Spindle Drawing Box.	One 8 Spindle Cone Rover
One 6 Spindle Second Finisher.	One 48 Spindle Cap Spinner, 5 ft. end.
One 24 Spindle Dandy Rover.	One 48 Spindle Cap Spinner, 4 ft. end.
One 6 Spindle Cone Reducer.	One 48 Spindle Boyd Ring Twister.

Yarn Conditioning Machine, C. G. Sargent's Sons Corp., Graniteville, Mass.

One Six Gang Universal Winder, equipped for cones or straight tubes, Universal Winding Co., Boston, Mass.

One Tape Band Sewing Machine, The Singer Mfg. Co., New York.

The power for the Yarn Department as well as for the Power Weaving Department is supplied through two 24 h. p. Allis-Chalmers motors.

French System of Drawing and Spinning

The machinery made by the "Societe Alsacienne de Constructions Mechaniques" at Mulhouse, France, consists of the following:

Peigneuse-Laine modèle P. L. B.	Model P. L. B. Comb with creel for 24 doublings.
Intersecting de 2 têtes. Pass. I and II après Peigneuses.	Intersecting Gill Box (2 heads)
Gill Box (2 têtes)	Gill Box (2 heads)
Étirage à Frottoirs (2 têtes)	1st Drawing (2 heads)
Étirage à Frottoirs (2 têtes)	2nd Drawing (2 heads)
Étirage à Frottoirs (2 têtes)	3rd Drawing (2 heads)
Étirage Réunion (4 Peignes)	Reducer (4 Porcupines)
Bobinier de Châte (8 Peignes)	Slubber (8 Porcupines)
Bobinier (8 Peignes)	1st Intermediate (8 Porcupines)
Bobinier (8 Peignes)	2nd Intermediate (8 Porcupines)
Bobinier (8 Peignes)	Rover (8 Porcupines)
Finisseur (16 Peignes)	Finisher (16 Porcupines)
Self-acting à Filer (150 Broches)	Self-acting Worsted Mule (150 Spindles)

The apparatus in this department for obtaining and preserving the requisite condition of humidity consists of:

Twelve Turbo Humidifier Heads from The G. M. Parks Co., Fitchburg, Mass., are automatically controlled by a Humidity Regulator made by this same company. The compressed air for these heads is supplied by an Ingersoll-Rand 8 x 8 steam driven air compressor located in power house.

The power of this department is supplied through a 15 h. p. Allis-Chalmers Co.'s 220 volt motor.

Textile Testing Laboratory

Several years ago the importance of testing fibres, yarns and fabrics began to be appreciated and through the generosity of a friend a beginning was made by the establishment of a laboratory where the physical properties of textile may be determined and studied. To the original equipment has been added several pieces of apparatus, so that there is in the laboratory the following equipment:—

One Bausch and Lomb D. D. Microscope provided with regular eye pieces and objective for low power, high power or photographic work.

One Eye Piece Micrometer.

One Filar Micrometer (1 inch equivalent eye piece) for refined diameter determinations.

One Standard Glass Stage with corrections from comparison against the International m. m.

Complete outfit for mounting slides and for taking photo-micrographs. Camera Lucida.

Microtome Sectioning Outfit.

One Small Skein Testing Machine.

- One Electric Conditioning Oven, Emerson Apparatus Co., Boston.
- One Single Yarn Testing Machine made by G. R. Smith & Co., Bradford, England.
- One Hydraulic Cloth Strength Testing Machine for 4 inch samples. Made by G. R. Smith & Co., Bradford, England.
- One Hand Cloth Strength Testing Machine for 1 inch samples. Made by Brown Bros., Providence, R. I.
- One Brown & Sharpe Meter Reel.
- One Strength Testing Machine for yarn or fabrics made by Henry L. Scott Co. of Pawtucket R. I. Capacity 300 lbs. Electrically operated.
- One Strength Testing Machine. Made by Louis Schopper, Leipzig, Germany. Capacity 500 kilograms for test pieces 50 m. m. in width and from 100 to 400 m. m. in length. Provided with special jaws to test twine, strings, cords or fabrics.
- One Fibre Testing Machine made by Louis Schopper. Capacity 1 gram to 1.5 kilogram. Provided with jaws to test fibre or fine yarns.
- One Yarn Strength Testing Machine made by Louis Schopper. Capacity 1000 grams to 5000 grams. Length of test pieces 200 m. m. to 1000 m. m.
- One Yarn Strength Testing Machine made by Louis Schopper. Capacity 5 kilograms to 30 kilograms. Test pieces 500 m. m.
- One Hygrometer Dr. Koppe's System.
- One Accurate Tread or Pick Counter.
- One Universal Quadrant Scales for determining counts of yarn by the various yarn systems in use.
- These last three pieces of apparatus are also made by Louis Schopper, Leipzig, Germany.
- One Lowinson's Thread Micrometer, Charles Lowinson, N. Y. City.

The laboratory has been constructed to give plenty of light. The temperature and humidity of the room is controlled by the Automatic Humidity and Temperature Regulator made by the American Moistening Company of Boston, Mass.

Yarn Weighing and Testing

From Lowell Scale Company:

One Large Platform Scale.

From Howe Scale Company:

One Dram Scale.

One Gram Scale.

One Ounce Scale.

One Pound and Ounce Scale.

Miscellaneous apparatus.

Two Yarn Reels.

One Roving Reel.

Three Grain Scales.

One Run Beam.

One Hand Yarn Strength Tester.

Two Twist Counters.

Two Barber Knotters.

Complete Set of Roving Cans from the Laminar Fibre Co., North Cambridge, Mass.

DESIGN AND POWER WEAVING DEPARTMENT

Design Department

One Christian Becker Balance.
Five Volman & Sons Balances.
One Twist Tester—James H. Heal, Halifax, England.
One Microscope—Bausch & Lomb.
One Reel—Brown & Sharpe Mfg. Co., Providence.
One Pick Counter—Chas. Lowinson, N. Y.
One Torsion Calculation Balance, Torsion Balance Co., N. Y.
One Grain Roving Scales, Brown & Sharpe, Providence.
One Gramme Roving Scale. Brown & Sharpe, Providence.
Miscellaneous dies for cutting accurately standard sizes of cloth.

Cotton Warp Preparation Equipment

Consists of one Spooler, a Warper, and Slasher made by Saco-Lowell Shops, Lowell, Mass.
One Beamer, T. C. Entwistle Co., Lowell, Mass.
One Winder, Altemus & Co., Philadelphia, Pa.
One 400 End Improved Draper Warper, Draper Co., Hopedale, Mass.
Drawing-in Frames, etc.
One Pat. Slasher Press Roll, J. Battles & Co., Lawrence, Mass.
One Pat. Expansion Comb for Warper, T. C. Entwistle Co., Lowell, Mass.
One Quiller, Johnson & Bassett, Worcester, Mass.
Set of six in. spools for Warper, Macrodi Fibre Co., Woonsocket, R. I.
One Universal Winder for Cop and Bobbin winding, Universal Winder Co., Boston, Mass. This is driven by a 1-8 h. p. 220 volt direct current motor made by Holtzer-Cabot Electric Co.

Woolen and Worsted Warp Preparation

From Davis & Furber Machine Co., North Andover, Mass.
Two 40 End Jack Spoolers. One 60 inch Reel.
Two Spool Racks for 12 spools each. One 82 inch Reel.
One Pattern Dry Frame Dresser. One Double Head Beamer.
One Pipe and Cylinder Dresser.

Braiding Machinery

Made by the New England Butt Co., Providence, R. I.
One 24 Line Hercules Braider. One Tubular Braider.
One 12 Line Braider. One Sautach Braider.

Silk Preparing Machinery

One Winder, Atwood Machine Co., Stonington, Conn.
One Ribbon Quiller, Atwood Machine Co., Stonington, Conn.
One Warper and Beamer, Swiss Style, Atwood Machine Co., Stonington, Conn.
One Double Frame, Atwood Machine Co., Stonington, Conn.

The power for the warp preparing section is supplied through a 7½ h. p. 220 volt General Electric Co. motor.

Plain Looms

- One Plain Northrup Loom, Draper Co., Hopedale, Mass.
- One Plain Print Cloth Loom, Whitin Machine Works, Whitinsville, Mass. To this is attached a Kip-Armstrong Warp Electric Stop Motion.
- One Plain Print Cloth Loom, Mason Machine Works, Taunton, Mass.
- One Kilburn & Lincoln Plain Loom.
- Nine Saco-Lowell Shops Plain Looms.
- One English Loom, Hattersley.
- One Improved Northrop Loom, fine sateen, Draper Company, Hopedale, Mass.
- One Eight Harness Corduroy Loom, Draper Company, Hopedale, Mass.
- One Side Cam Twill Loom, Whitin Machine Works, Whitinsville, Mass.
- One Five Harness Sateen Loom, Saco-Lowell Shops, Lowell, Mass.
- One 32 inch 2 x 1 Loom, Saco-Lowell Shops, Lowell, Mass.
- One Harriman Automatic Shuttle Changing Loom.
- One Lewiston Machine Co. Loom, 4 harness, side cam.
- One Crompton Jean Loom.

Four of the above looms are equipped with Abbott cleavers made by The Abbott Wire and Cast Steel Warp Cleaving Co., Lisbon Falls, Me.

Fancy Looms

- One Northrop Loom with dobby, Draper Co., Hopedale, Mass.
- One Lewiston Machine Company Bag Loom.
- One Stafford Ideal Loom, 16 harness, automatic shuttle changing device. Stafford Loom Co., Readville, Mass.
- One Twenty Harness Dobby Loom, Whitin Machine Works, Whitinsville, Mass.

From Crompton-Knowles Loom Works:

- One Knowles Gingham Loom, 4 x 1 boxes.
- One Crompton Gingham Loom, 4 x 1 boxes.
- One Crompton Towel Loom, 2 x 1 boxes.
- One Crompton Lappet Loom, with 16 harness dobby.
- One Knowles Fancy Cotton Loom, 20 harness dobby, 4 x 1 boxes, for fancy leno work.
- One Crompton Fancy Cotton Loom, single cylinder, 20 harness dobby.
- One Knowles Gem Loom, 20 harness, 4 x 4 boxes.
- One Crompton Worsted Looms, 24 harness, 4 x 4 boxes.
- One Crompton Fancy Loom, 6 x 1 double cylinder, 20 harness dobby.
- One Heavy Loom, 20 harness, 4 x 4 boxes.
- One Knowles Blanket Loom, 25 harness dobby, 4 x 4 boxes.
- One Knowles Worsted Loom, 32 harness, 4 x 4 boxes.
- Three Knowles Heavy Woolen Looms, 25 harness, 4 x 4 boxes.

Three Crompton & Knowles Intermediate Looms, 25 harness, 4 x 4 boxes, Crompton-Knowles Loom Works. One of these looms is operated by a direct connected $\frac{3}{4}$ h. p. 220 volt 3 phase 60 cycle General Electric motor.

One Model Dobby Attachment.

Jacquard Looms

From Crompton-Knowles Loom Works:

One Knowles Fancy Loom, single lift Jacquard.

One Knowles Fancy Loom, double lift Jacquard.

One Knowles Fancy Loom, Jacquard tied up for leno.

One Knowles Ingrain Carpet Loom, 4 x 4 boxes.

One Knowles Loom, 4 x 4 boxes, 54 inch, with 600 hook double lift double cylinder McMurdo Jacquard Head. Tied up for damask napkin designs.

One Crompton Ingrain Carpet Loom, 4 x 4 boxes.

One 72 in. Tapestry Loom with 2600 hook Halton Jacquard Head.

One 840 hook double lift, single cylinder Jacquard on Crompton-Knowles 4 bank ribbon loom. This loom is driven by a direct connected $\frac{1}{2}$ h. p. 220 volt 60 cycle Westinghouse motor.

One 800 hook, double lift Knowles Gem Silk Brocade Jacquard Machine, 4 x 4 boxes.

One Stafford Silk Loom, 1200 hook Halton Jacquard.

One 400 hook single lift, Schaum & Uhlinger Jacquard mounted for 4 bank narrow fabric loom.

One Felix Tonnar German Plush Loom with 400 hook Crompton-Knowles Jacquard Head.

One Skinner Brussels Carpet Loom three-quarters wide equipped with 1280 hook Jacquard head. Presented by the Bigelow-Hartford Carpet Co., Lowell, Mass.

Card Cutting Machines

One Jacquard Fine Index Card Cutting Machine, John Royle & Sons, Paterson, N. J.

One Jacquard French Index Card Cutting Machine, John Royle & Sons, Paterson, N. J.

One Jacquard French Index Card Cutting Machine. Presented by the Bigelow-Hartford Carpet Co., Lowell, Mass.

Hand Loom Weaving

Twelve Hand Looms, 3 x 3 boxes, 20 harness dobby.

Eight Hand Looms, 4 x 4 boxes, 24 harness dobby.

Eight Hand Looms, 3 x 3 boxes, 32 harness dobby.

Six Hand Looms, 4 x 4 boxes, 30 harness dobby.

Two Hand Looms, 4 x 4 boxes, 32 harness dobby.

Two Hand Looms, 4 x 4 boxes, 200 hook Jacquard.

Two Hand Looms, 3 x 3 boxes, 200 hook Jacquard.
Two Hand Looms, 3 x 3 boxes, 600 hook Jacquard.
One Hand Loom, 48 harness.
Two Hand Looms with treadles.
Pattern Warping Stands. Beaming, drawing-in stands, etc.

CHEMISTRY AND DYEING DEPARTMENT

Chemical Laboratories

The General Chemistry and Qualitative Analysis Laboratory includes:
One hundred and twenty laboratory desks, each containing a full set of apparatus for the first year's work in Chemistry; also gas and water fittings, reagents and sinks.
There are also Four Large Double Hoods, Two Steam Baths, and Two Parson's Automatic Gas Generators.

Quantitative Laboratory

One No. 1 Steam Heated Water Still made by Barnstead Water Still Co.
One Steam Drying Closet and Several Drying Ovens.
One Large Steam Bath.
One Electrolytic Table.
Five Hoods.
Fifty laboratory desks, each fully provided with apparatus.

Balance Room

One Large Christian Becker Analytical Balance.
Seven Small Christian Becker Analytical Balances.
One Standing Analytical Balance.
One Eimer & Amend Analytical Balance.
One H. L. Becker's Sons & Co. Analytical Balance.

Organic Laboratory

One Electric Combustion Furnace.
Three Gas Combustion Furnaces.
One Lother-Meyers Furnace for table.
Two Autoclaves.
One Ball Mill.
One automatic stirring apparatus.
One 3 h. p. Holtzer-Cabot Electric Co.'s motor.
Laboratory tables, lockers, hoods, electric ovens and heating apparatus, etc.

Instructor's Laboratory

Adjacent to the Organic Laboratory is arranged an Instructor's Laboratory equipped with Steam Bath, Hood, Cases and Working Benches.

Microscopic, Photographic and Colorimetric Laboratory

- Two benches for microscopical work.
- Five Bausch & Lomb Compound Microscopes.
- One Natchet et Fils Compound Microscope.
- One Tintometer.
- One Ives Colorimeter.
- One Polariscope made by Franz Schmidt & Haensch, Berlin, Germany.
- One Spectroscope made by John Browning, London, England.
- One Bausch & Lomb Model G. Photomicrographic apparatus equipped with a B. & L. D. D. S. Microscope and all necessary apparatus.
- Desks and shelves for the apparatus and reagents necessary for this branch of the work.
- Adjoining this Laboratory is a dark room for Spectrum Analysis, Photometric and Photographic Work, etc.
- In this dark room has been placed a piece of apparatus for determining the relative fading powers of various light sources. Besides the common gas and electric lamps there is installed a Solar Determinator made by the Atlas Electric Co., Chicago, Ill.; also a 400 watt Nela Trutint and Color Matching Unit made by Nela Specialties Division, Cleveland, Ohio.

Assistant Instructor's Laboratory

- One Large Case of Chemicals.
- One Double Hood.
- One Copper Water Bath.
- One Soapstone Sink with a drain board.
- Benches, desks and complete fittings for water, gas and suction.

Private Laboratory

- One Troemner Balance.
- One Large B. & L. Microscope.
- One K. P. Bausch & Lomb Binocular Microscope.
- One Case of Chemicals and Apparatus.
- Three Laboratory Benches, with necessary fittings.
- One Large Hood.
- One Steam Bath.
- One Experimental Dye Apparatus.
- One Slate Sink and Drain Board.
- One Steam Jacketed Kettle.

Chemical Lecture Room and Museum

- Is provided with a lecture table fully equipped with gas, water, sinks, a hood and sufficient apparatus for lecture experiments.
- An electric arc reflectroscope provided with suitable screen, which makes it possible to illustrate a lecture either from slides or by cuts, photographs or objects.

Seats are provided for eighty students, and are arranged on a raised floor so that every student has a full view of the lecture table.

The Chemical Museum contains various collections of dyestuffs and chemicals for exhibition and for lecture demonstration. It is also equipped with a stereopticon and is used as an auxiliary lecture room for small classes.

Experimental Dyeing Laboratory

The dyeing laboratory is equipped with individual benches, small dyeing apparatus, reels, balances, apparatus for dye testing, such as frames for exposing dyed material to light, and a complete collection of dyestuff samples and sample cards.

Fifty-six Steam Coil Experimental Dyeing Baths, also a Drying Chamber, Ageing Chamber and a Hot Water Supply Tank.

Dye Stuff Room

Adjacent to the Experimental Dyeing Laboratory there has been provided a well lighted room for the storage of a great variety of dyestuffs. Steel shelving has been arranged so that the samples are easy of access. All samples are catalogued in a card file, thus facilitating their use. In this same room is provided a sink and cement table with balances.

Experimental Printing Laboratory

One Calico Printing Machine, made by Mather & Platt, Manchester, England.

One Iron Jacketed Steaming Chamber from A. Edmeston & Son, Patricroft, England.

One set of Steam Jacketed Copper Kettles.

Fuel and Oil Analysis Laboratory

Mather Bomb Calorimeter, with complete outfit.

Emerson Bomb Calorimeter, with complete outfit.

Parr Calorimeter. Sartorius Specific Gravity Balance.

Abbe Refractometer. Two Becker Analytical Balances.

Torsion Viscosimeter. Gas Muffle Furnace.

Tagliabue Viscosimeter. Kny Scherer Oil Tester.

Tagliabue Cold Test Apparatus. Graefe Gas Calorimeter.

Pensky Martin Oil Tester. Orsat Gas Analysis Apparatus.

N. Y. State Oil Tester. Laboratory Tables, Lockers and Hoods.

Industrial Chemistry Laboratory

One Filter Press, Type E, T. Shriver and Co.

One Single Acting Triplex Plunger Pump, Gould's Mfg. Co.

One Vacuum Drying Apparatus, Norman Hubbard's Sons.

One Surface Condenser, Norman Hubbard's Sons.

One Packard Vacuum Pump, Norman Hubbard's Sons.

One Vacuum Evaporator, Swenson System, American Foundry and Machine Co.
 One Centrifugal, C. H. Chavant and Co.
 One Double Jar Mill, F. I. Stokes and Co.
 One Sturtevant Ore Crusher.
 One Sturtevant Pulverizer.
 Ten Copper Steam Baths, D. H. Wilson and Co.
 One 36 in. Ventilating Fan, Mass. Fan Co.
 One Autoclave.
 Lockers and Tables.
 Power for this department is furnished through a 7½ h. p. 220 volt General Electric Co.'s motor.

Commercial Dyeing Laboratory

One Kier, Atlantic Works, East Boston, Mass.
 One small Kier, fitted with E. D. Jefferson's circulating device.
 One Electrolyzer for manufacturing bleaching solutions, The National Laundry Machine Co., Dayton, Ohio.
 One Permutit Filter. The Permutit Co., New York City.
 One Mercerizing Machine.
 One Raw Stock Dyeing Machine, Klauder-Weldon Dyeing Machine Co., Yardley, Pa.
 One Yarn Dyeing Machine, Klauder-Weldon Dyeing Machine Co., Yardley, Pa.
 One Jig Dyeing Machine, The Textile-Finishing Machinery Co., Providence, R. I.
 One set of Drying Cans, The Textile-Finishing Machinery Co., Providence, R. I.
 One Chain Dyeing Machine, T. C. Entwistle Co., Lowell, Mass.
 One Raw Stock Drying Table, Philadelphia Textile Machinery Co., Philadelphia, Pa.
 One Padding Mangle, Arlington Machine Works, Arlington, Mass.
 One Hydro-Extractor, W. H. Tolhurst & Son, Troy, N. Y.
 One Experimental Dyeing Machine, The Psarski Dyeing Machine Company, Cleveland, Ohio.
 One Experimental Dyeing Machine. equipped for raw stock or yarns, Hussong Dyeing Machine Co., Croweville, N. J.
 One Sample Piece Dyeing Machine, Rodney Hunt Co., Orange, Mass., equipped with an automatic temperature and pressure regulating apparatus made by C. J. Tagliabue Mfg. Co., Brooklyn, N. Y.
 One Laboratory Dyeing Machine, Franklin Process Co., Providence, R. I.
 Seven Dye Tubs.
 One Reeves' Variable Speed Device.
 Two Trucks.
 The power for this department is supplied through a 15 h. p. 220 volt, Allis-Chalmers Co.'s motor.

FINISHING DEPARTMENT

Woolen and Worsted

- One 2 string Washer, Rodney Hunt Co., Orange, Mass.
- One Fulling Mill, Rodney Hunt Co., Orange, Mass.
- One Sample Fulling Mill, James Hunter & Co., North Adams, Mass.
- One Up and Down Dry Gig, Curtis & Marble, Worcester, Mass.
- One Rolling and Stretching Machine, Curtis & Marble, Worcester, Mass.
- One Up and Down Wet Gig, Curtis & Marble, Worcester, Mass.
- One Steam Finishing Machine, Curtis & Marble, Worcester, Mass.
- One 60 in. 3 burner Singeing Machine, adapted for Cotton, Silk or Worsted Goods, Curtis & Marble, Worcester, Mass.
- One Two Cylinder Double Acting Brushing Machine, Curtis & Marble, Worcester, Mass.
- One 60 in. 4 Cylinder Sanding and Polishing Machine, Curtis & Marble, Worcester, Mass.
- One Kicker Mill, James Hunter & Co., North Adams, Mass.
- One 6-4 Double Shear, Parks & Woolson, Springfield, Vt.
- One Single Shear, Curtis & Marble. Donated by Mass. Mohair Plush Co., Lowell, Mass.
- One Dewing Machine, G. W. Voelker & Co., Woonsocket, R. I.
- One 6-4 Voelker Rotary Press, G. W. Voelker & Co., Woonsocket, R. I.
- One Tentering and Drying Machine, John Heathcote, Providence, R. I.
- One Single Crabbing Machine, H. W. Butterworth & Son, Philadelphia, Pa.
- One 72 in. Woolen Napper, Davis & Furber, North Andover, Mass.
- One 32 in. Basket Hydro-Extractor, W. H. Tolhurst, Troy, N. Y.
- One A. W. C. Measuring and Weighing Machine, Parks & Woolson, Springfield, Vt.
- One Lintz & Eckhardt Cloth Numbering Machine, Improved by Durbrow & Hearne Mfg. Co., New York.
- One Steam Press for Underwear, United States Hoffman Co., Syracuse, N. Y.
- One Sewing Machine, Birch Brothers, Somerville, Mass.
- Soap tanks, perch, burling and measuring tables.
- The power for this department is supplied through a 15 h. p. 220 volt Allis-Chalmers motor.

Cotton Finishing Machinery

From Curtis & Marble, Worcester, Mass.:

- One 40 in. Inspecting and Brushing Machine.
- One 44 in. No. 25 Railway Sewing and Rolling Machine.

- One 44 in. Cotton Shearing Machine, Type No. 34.
- One 44 in. No. 3 Steam Calender Rolling Machine.
- One 40 in. Cloth Folder.
- One 40 in. Winder and Measurer.
- One set 44 in. Shear Blades for grinding purposes.
- One 48 in. No. 4 Opening, Sewing and Re-rolling Machine, Dinsmore Manufacturing Co., Salem, Mass.
- One No. 1 Hand Power Portable Railway Sewing Machine, Dinsmore Manufacturing Co., Salem, Mass.
- One 40 in. 3 Roll Water Mangle, with husk and brass rolls and usual attachments, The Textile-Finishing Machinery Co., Providence, R. I.
- One 48 in. Mycock Scutcher, for the Water Mangle, Thos. Leyland & Co., Boston, Mass.
- One 40 in. Mycock Cloth Expander, for the Water Mangle, Thos. Leyland & Co., Boston, Mass.
- One 40 in. 2 Roll Starch Mangle, The Textile-Finishing Machinery Co., Providence, R. I.
- One 40 in. Upright Drying Machine with 10 copper cylinders, The Textile-Finishing Machinery Co., Providence, R. I.
- These are equipped with Files Dry Can System, Files Engineering Co., Inc., Bridgeport, Conn.
- One 16 x 24 in. Bronze Covered Stretcher, for the Drying Cans, C. A. Luther & Co., Providence, R. I.
- One 40 in. double Bristle Stretcher, for Drying Cans, American Finishing Machinery Co., Boston, Mass.
- One 40 in. Sprinkler, The Textile-Finishing Machinery Co., Providence, R. I.
- One 40 in. 5 Roll Universal Calender, with Chasing Attachment, The Textile-Finishing Machinery Co., Providence, R. I.
- One 40 in. Mycock Cloth Expander, for the calender, Thos. Leyland & Co., Boston, Mass.
- One 40 in. Tommy Dodd Starch Mangle, H. W. Butterworth & Sons Co., Philadelphia, Pa.
- One Direct Driven 44 in. 50 ft. Vibratory Tenting Machine, H. W. Butterworth & Sons Co., Philadelphia, Pa.
- This machine is separately driven by a 7½ h. p. variable speed 220 volt direct current General Electric Co.'s motor and is equipped with The Schwartz Automatic Electric Guider, made by L. H. A. Schwartz & Co., Boston, Mass.
- One Pasting Table with Plate, Textile Finishing Machinery Co., Providence, R. I.
- Two Copper Steam Jacketed Starch Kettles.
- The power for the rest of the department is supplied through a 25 h. p. 220 volt Westinghouse direct current motor.

ENGINEERING DEPARTMENT

STEAM ENGINEERING LABORATORY

The engineering laboratory contains the following equipment:

50 H. P. Allis-Chalmers Corliss Steam Engine (Reliance type) for experimental purposes arranged to operate condensing or non-condensing, and direct connected to an Alden absorption dynamometer.

Wheeler Surface Condenser (200 sq. ft. surface) with 5 in. x 6 in. x 6 in. x 7 in. combined air and circulating pump.

25 K. W. Kerr Steam Turbine (7 stage) direct connected to 25 K. W. Richmond Electric Co. alternating current generator and arranged for both condensing and non-condensing conditions. The piping is also arranged that this turbine may be run as a low pressure turbine in conjunction with the Allis-Chalmers engine. The generator is especially designed for experimental work with connections and windings for all the commercial phases.

5000 gallon Pressure Tank for heads up to 300 ft. and connections for experimental work.

Two 2500 gallon Concrete Storage Tanks.

Complete set of Weighing and Suction Tanks on Fairbanks Standard scales.

Deane Triplex Power Pump 4 in. x 6 in.

One Hays Flue Gas Collector and Instruments for determination of CO_2 , O and CO.

One Throttling Calorimeter and one Separating Calorimeter made by Schaeffer & Budenberg Mfg. Co.

One 2 in. Centrifugal Pump made by Lawrence Machine Co. and direct connected to a 3 H. P. General Electric Co. 220 volt induction motor.

Miscellaneous equipment of Pressure, Vacuum and Draft Gages, Thermometers, etc.

Clayton Air Compressor (belted type) 6 in. x 6 in.

Centrifugal Pump, 2 inch (belted type), Lawrence Machine Company, Lawrence, Mass.

$\frac{3}{4}$ inch Metropolitan Injector and $\frac{3}{4}$ inch ejectors.

One Sturtevant engine driven induced draft fan connected for experimental work.

One Massachusetts motor driven fan and heater combination arranged for testing work on heating, drying, etc.

Differential Transmission Dynamometer.

Variable Speed Transmission.

One dead weight tester for calibrating pressure gages.

One vacuum pump and mercury column for calibrating vacuum gages.

Two Steam Engine Indicators (inside and outside spring pattern) with reducing wheels and motions. Planimeters (plain and averaging types). Speed Counters and Tachometers.

One Gas Engine Indicator.

Apparatus for investigating the rate of heat transmission for steam heating coils and condenser tubes.

All steam supplied to the laboratory passes through a 4 inch horizontal Cochrane steam separator to insure dry steam for experimental work.

Buff & Buff Engineers Transit.

Philadelphia Level Rod.

Apparatus for testing friction and slip of belts and pulleys.

ELECTRICAL ENGINEERING LABORATORY

Standard Marine Finished Slate Switchboard made up of:

One Westinghouse A. C. Generator Panel 25 K. W.

One Westinghouse A. C. Generator Panel 15 K. W.

One Circuit Panel for lights and motors.

One 15 K. V. A. 220 Volt 3-Phase 60 Cycle Synchronous Motor.

One 24 H. P. 220 Volt D. C. Allis-Chalmers Co. Motor.

One 10 H. P. 220 Volt D. C. General Electric Co. compound wound motor.

One 7.5 H. P. 220 Volt 3-Phase 60 Cycle General Electric Induction Motor.

One 10 H. P. 220 volt 3-Phase Induction Motor, General Electric Company.

One 4 H. P. General Electric Dynamometer which may be used either as a rotary transformer or a double current generator. Receives or delivers through transformer 220 Volt 60 cycle 3-phase on one side and delivers or receives 220 Volt direct current.

One 5 K. W. 220 Volt 440 Volt Transformer.

Westinghouse Portable Polyphase Wattmeter with current transformers.

Three General Electric A. C. Wattmeters.

Two General Electric A. C. Ammeters.

One General Electric A. C. Voltmeter.

Two 250 Volt D. C. Weston Portable Voltmeters.

One Weston D. C. Portable Millivoltmeter. 2 ampere and 20 ampere shunts for use with the above instrument.

One 150 amp. D. C. Weston Portable Ammeter.

Two Weston Model 45 D. C. Ammeters.

Two Weston Model 260 D. C. Ammeters.

One Weston Model 260 D. C. Voltmeter.

One Thompson 50 ampere 2 wire 220 volt recording Wattmeter, General Electric Co.

One Weston Laboratory Standard Voltmeter with multiplier to 600 volts.

One Small Wheatstone Bridge with D'Arsonval Wall Galvanometer.

One Simple Galvanometer.

One Leeds & Northrup Potentiometer No. 7551.

One Wall Galvanometer L. & N. 2210 D'Arsonval type.
 One Wheatstone Bridge L. & N. No. 4725 A. with D'Arsonval Galvanometer L. & N. tripod type.
 One Slide Wire Bridge, Leeds and Northrup.
 One Portable Galvanometer No. 2323, Leeds & Northrup.
 One Ohmmeter, Leeds & Northrup.
 One Electro-Dynamometer, Leeds & Northrup.
 One Weston Standard Cell.
 Two Tachometers.
 One Potential Phase Shifter made by States Co., Hartford, Conn.
 One Standard Leeds & Northrup Photometer with Lummer-Brodhun Screen Compound Rotator and Rotating Sector, Screens, etc.
 One Macbeth Illuminometer, Leeds & Northrup.
 One Esterline Portable Curve Drawing Wattmeter designed for Polyphase A. C. or Direct Current power measurements. Mechanism to vary speed of paper.
 Two Hand Feed Arc Lamps for stereopticons.
 Resistance boxes of various sizes and other apparatus necessary for commercial testing of lamps, motors, etc.
 Two cell storage battery for constant voltage current supply.
 An Exhibition Board containing samples of the Chloride-Exide Storage Battery Plates donated by the Electric Storage Battery Co. of Philadelphia.
 Miscellaneous apparatus for experiments in Mechanics, Heat, Light, Sound and Electricity.

Machine Shop

The equipment of the machine shop is as follows:

Four Standard Engine Lathes, 13 inch swing, 6 ft. bed, from Flather & Co., Nashua, N. H.
 Three Standard Engine Lathes, 14 inch swing, 6 ft. bed, from Flather & Co., Nashua, N. H.
 One Standard Engine Lathe, 15 inch swing, 6 ft. bed, from F. E. Reed Co., Worcester, Mass.
 One Engine Lathe, 18 inch swing, 10 ft. bed, from Flather & Co., Nashua, N. H.
 One Engine Lathe, 18 inch swing, 6 ft. bed, from Champion Tool Works, Cincinnati, Ohio.
 One Standard Engine Lathe, 15 inch swing, 6 ft. bed, from S. H. Putnam Sons, Fitchburg, Mass.
 Five Speed Lathes, 17 inch swing, 5 ft. bed, from J. G. Blount, Everett, Mass.
 One No. 1 Universal Milling Machine, with all three feeds automatic, from Kempsmith Mfg. Co., Milwaukee, Wis.
 One 24 in. x 24 in. 6 ft. Planer, from the Mark Flather Planer Co., Nashua, N. H.

- One 23 inch Upright Drill with back gears and power feed, from J. E. Snyder & Son, Worcester, Mass.
 - One 14 inch Single Sensitive Drill from the Stanley Mfg. Co., Lawrence, Mass.
 - One No. 1 Universal Grinder from Landis Tool Co., Waynesboro, Pa.
 - One 20 inch Wet Tool Grinder from J. G. Blount, Everett, Mass.
 - One 12 inch, Two Wheel, Dry Grinder from J. G. Blount, Everett, Mass.
 - One American Twist Drill Grinder from the Heald Machine Co., Worcester, Mass.
 - One Type 1 B Portable Electric Grinder from the Cincinnati Electric Tool Co., Cincinnati, Ohio.
 - One 30 inch Grindstone and Frame from the Athol Machine Co., Athol, Mass.
 - One Single Spindle Centering Machine from D. E. Whiton Machine Co., New London, Conn.
 - One 15 inch Shaper from Potter & Johnson, Pawtucket, R. I.
 - One Power Hack Saw from the Fairbanks Co., Boston, Mass.
 - One Cold Saw from John T. Burr & Son, Brooklyn, N. Y.
 - Two Blacksmith Forges, Anvils and Tools are also provided.
 - One Gas Oven for hardening and tempering tools.
 - One Eureka Metal Power Saw. Manning, Maxwell & Moore.
 - One Type "C C" Electric Drill. Cincinnati Electric Tool Co.
 - One Universal Milling Attachment for Kempsmith Milling Machine, Taylor Machinery Co.
 - One Hisey Type "B" $\frac{1}{2}$ H. P. Tool Post Grinder. Taylor Machinery Co.
 - One No. 2 Cory Bench Straightener. Manning, Maxwell & Moore.
 - One No. 3 Universal Cutter and Reamer Grinding Machine. Brown and Sharpe.
- These tools are fully equipped with chucks, centers, tools, etc., for a great variety of work. Benches with vises are also provided for such work as chipping, filing, etc.
- A well equipped tool room contains a selected stock of the best makes of small tools such as drills, taps and dies, milling cutters, reamers, gauges, micrometers, etc.
- The following wood working tools are also provided in addition to benches for pattern making:—
- One Pattern Maker's Lathe, 16 in. swing, 8 ft. bed, from Fay & Scott, Dexter, Me.
 - One 32 in. Band Saw from the Crescent Machine Co., Leetonia, Ohio.
 - One Iron Single Saw Bench, from the Crescent Machine Co., Leetonia, Ohio.
 - One Double Saw Bench.
 - One 12 in. Buzz Planer from W. W. Carey, Lowell, Mass.
- The power for this department is supplied through a 10 h. p. 220 volt direct current Allis Chalmers Co.'s motor.

POWER, LIGHT, HEAT AND VENTILATING PLANT

In the new Power House completed in 1913, there is located the main power generating apparatus for supplying light, heat and power to all departments of the school. The equipment here consists of:

Two 250 h. p. Heine Water Tube Boilers equipped with Perfection grates.

One 300 H. P. Aultman and Taylor Horizontal Water Tube Boiler equipped in U. S. Rocking Grates.

One Knowles Boiler Feed Pump 6 x 4 x 6.

One Deane Boiler Feed Pump 6 x 4 x 6.

All feed water is heated by Cochrane Open Feed Water Heater, provided with a 30000 lb. Lea Recorder and a Cochrane Oil Extractor. Harrison Safety Boiler Works, Philadelphia, Pa.

3 inch Venturi meter in feed line with indicating manometer, Builders Iron Foundry, Providence, R. I.

In the Engine Room are located:

One Payne 14 x 14 Automatic High Speed Engine 125 H. P. Direct connected to 75 K. W. 220 Volt D. C. Bullock Generator.

One $9\frac{1}{2}$ x $11\frac{3}{4}$ Nash Gas Engine of 50 H. P. four cycle type, with speed regulating clutch and a "hit and miss" governor. Direct connected to a 30 K. W. 220 Volt D. C. Bullock Generator.

One Steam Driven Ingersoll-Rand 8 x 8 Air Compressor, for use with Turbo Heads, installed in the French Spinning Department by the G. M. Parks Co., Fitchburg, Mass.

One $5\frac{1}{2}$ x 6 Motor Driven Air Compressor with 20 cu. ft. storage tank for use in starting Nash Gas Engine.

One Cross Oil Filter.

The station switchboard is of Marine Finished Slate 90 inches in height and consists of two generator panels and one circuit panel. From this lead circuits supplying approximately 1200-16 candle power equivalent lamps and over 270 H. P. in motors, located in various departments of the school.

The power house is connected with the main school buildings by a tunnel through which all wires, steam and water pipes are carried. The steam pipes supply heat to the buildings by means of direct radiation and by means of the Sturtevant Double Duct Heating and Ventilating System located in the basement of Southwick Hall and by the Sturtevant Fan and Heater located in the basement of Kitson Hall. Direct driven exhaust fans are placed on the roof of Southwick Hall and in the basement laboratories.

The Humidity of the Spinning and Weaving Department is provided by the American Moistening Company's system, including 12 heads, a Knowles Triplex 4 x 4 power pump and tank.

ATHLETICS

Through the generosity of Mr. Frederick Fanning Ayer the school has been provided with a Campus and Athletic Field of about three acres. This has been carefully graded and laid out for base-ball, foot-ball and track athletics. Bleachers have been provided for use at the out-of-door games.

To enclose this field the Alumni Class Fence has been partly built. It is made of forged iron sections supported between brick columns. Each section is contributed by a class, so that in the course of a few years this fence will entirely enclose the field.

On the upper floor of the Falmouth Street Building there has been provided a recreation room for the use of the students at such times as their attendance is not required in classes. This room is also used by those who take part in athletics, and connected to it is a smaller room provided with shower baths.

The upper hall of Southwick Hall has been equipped with gymnastic apparatus. Chest weights, wooden dumb bells, Indian clubs, a set of travelling rings, a vaulting horse, parallel bars, a punching bag and several sets of foils and single sticks have been provided.

In order to be sure that no student having any dangerous physical weakness takes part in any athletic contest, all candidates for the various athletic teams are obliged to pass a satisfactory physical examination.

Day Classes

ENTRANCE REQUIREMENTS

Degree Courses

Candidates for admission to either of the degree courses must be graduates of a school approved by the New England College Entrance Certificate Board or by the Board of Regents of New York, and must present a certificate from the principal of the school last attended, reporting upon the subjects pursued and the points obtained according to the schedule of studies given hereafter. A total of fourteen points is required.

A point represents satisfactory work in a year's study in a specified subject in an approved secondary school.

Required Subjects

	POINTS
Plain Geometry	1
Algebra A1	1½
Algebra A2	½
Elementary German A (two years) or	
Elementary French A (two years)	2
English	3
History { American or	
{ Mediaeval and Modern or	
{ English	1
	<hr/>
	9

Elective Subjects

	POINTS
Physics	1
Chemistry	1
Solid Geometry	1
Trigonometry	½
Mechanical Drawing	1
Mechanic Arts	1
History { American	1
{ Mediaeval and Modern or	1
{ English	1
Elementary German	
Elementary French or	2
} Two years	
Advanced French or German (one year in addition to requirements of Elementary French A or Elementary German A	1
Spanish	1
English	1

An applicant may also be admitted on the basis of entrance examinations in which case he must pass sufficient number of the required subjects to make nine points and present certificates showing satisfactory courses in such of the elective subjects to make five additional points.

The object of the elective requirements is to encourage greater breadth of preparation than that covered by the required branches. Certificates covering other subjects than those listed as elective will be entertained.

Diploma Courses

Candidates for admission to the Diploma Courses are accepted upon presentation of properly vouched certificates showing the completion of a regular four year course in a High School or Academy of reputable standing. The certificates must specify that the applicant has satisfactorily passed the necessary subjects.

A total of nine points selected from the following list of subjects is required and no applicant for a diploma course can be accepted unless he presents in his certificate at least one year of Algebra, one year of Plane Geometry and three years of English. An applicant is advised to complete both Algebra A1 and A2 before entering.

The subject matter covered should be the same as described under the required subjects for the Degree Courses with the exception of German, French and Arithmetic, the requirements for which are given specifically under Elementary German B, Elementary French B and Arithmetic.

Subjects	POINTS
Algebra A1	1½
Algebra A2	½
Plane Geometry	1
English (Three Years)	3
English (Additional Year)	1
German (Elementary One Year)	1
French (Elementary One Year)	1
History { Mediaeval and Modern	1
{ English	1
{ American	1
Arithmetic	1

ENTRANCE EXAMINATION

All students who are unable to present a certificate for either the degree or diploma courses must pass entrance examinations. The examination for admission to the diploma and degree courses will be held as follows:

Tuesday, June 11, 1918; Tuesday, September 10, 1918; Tuesday, June 10, 1919:

Algebra	9 A. M. to 11 A. M.
History	11 A. M. to 1 P. M.
English	2 P. M. to 4 P. M.

Wednesday, June 12, 1918; Wednesday, September 11, 1918; Wednesday, June 11, 1919:

Plane Geometry	9 A. M. to 11 A. M.
German or French	11 A. M. to 1 P. M.
Arithmetic	2 P. M. to 4 P. M.

Candidates failing to pass the June examinations are allowed to try again in September; those who cannot attend the June examinations may present themselves in September.

REQUIRED SUBJECTS FOR ENTRANCE

Algebra

A1. Fundamental operations, factoring, determination of the highest common factor and least common multiple, fractions, simple and complex, simple equations of one or more unknown quantities, problems involving linear equations of either numerical or literal quantities, radicals, involution, and evolution, square and cube root, ratio and proportion, exponents including fractional and negative.

A2. Quadratic equations both numerical and literal. Simple problems involving one or more unknown quantities that may be solved by the methods of linear or quadratic equations, binomial theorem for positive integral exponents, problems involving methods of arithmetical and geometrical progressions.

Plane Geometry

The usual theorems and constructions of good text books including the general properties of plane rectilinear figures, the circle and the measurement of angles, similar polygons, areas, regular polygons, and the measurement of the circle. The solution of original problems and problems in mensuration of lines and plane surfaces.

Arithmetic

(Diploma Course Requirement)

This subject should be pursued for two reasons: that the applicant may acquire familiarity with the fundamental principles and that he may acquire accuracy in solution. Special attention should be given to problems in percentage, interest, discount, square and cube root, alligation, ratio and proportion, Metric System.

English

As secondary schools are following to a greater extent than heretofore, the requirements of the College Entrance Examination Board, it is recommended that the applicant to this school conform to the suggestions of this Board relative to English composition and Literature.

The examination consists of two parts, both of which are given at the same time.

(a) With the object of testing the student's ability to express his thoughts in writing clearly and correctly he will be required to write upon subjects familiar to him. Emphasis will be laid upon the composition, punctuation, grammar, idiom and formation of paragraphs. He will be judged by how well he writes rather than by how much he writes.

(b) The second part of the examination is prepared with the view of ascertaining the extent of the student's knowledge of good literature and to test this examination questions will be based on the books adopted by the National Conference on Uniform Entrance Requirements. Any course of equivalent amount if made up of standard works will be accepted.

Modern Languages

REQUIREMENTS FOR DEGREE COURSES

It is expected that the work in these subjects has covered a period of at least two years of preparatory school training or the equivalent. Importance should be given to the ability to translate into good idiomatic English, but attention should also be paid to grammar and construction that greater care may be used in translation.

Elementary German A

The entrance examination is composed of two parts, both taken, however, at the same time.

(a) Translation of simple German prose into good idiomatic English.

(b) Questions to test proficiency in grammar and simple English sentences to be rendered into German.

The requirements include the declension of articles, adjectives, pronouns, and nouns; the conjugation and inflection of weak and strong verbs; the simpler uses of the subjunctive; the use of the modal auxiliaries; the prepositions and their uses; the principal parts of important verbs and the elementary rules of syntax and word order.

Texts used in the language courses of any reputable High or Preparatory School will furnish reading for translation. A list of texts is offered by the College Entrance Examination Board.

Elementary French A

The entrance examination is composed of two parts, both taken, however, at the same time.

(a) Translation of simple French prose into good idiomatic English.

- (b) Questions to test proficiency in grammar and simple English sentences to be rendered into French.

The requirements include the principal parts, conjugation and inflection of the regular and the more common irregular verbs; the singular and plural forms of nouns and adjectives; the uses of articles and partitive construction; the forms and positions of personal pronoun; and the simpler uses of the conditional and subjunctive.

Suitable texts are suggested by the language courses of any reputable High or Preparatory School and by the requirements of the College Entrance Examination Board.

Note:—Students who have pursued two years of Elementary French as well as two years of Elementary German may present one subject to cover 2 points in the required subjects and the other to cover 2 points in the elective subjects.

REQUIREMENTS FOR DIPLOMA COURSES

Elementary French B

Applicants who enter for one of the three year courses may present one year's work in French in a secondary school. Those who present themselves for examination in this subject should be familiar with the rudiments of grammar and be able to translate simple French prose into good idiomatic English, also to translate into French, English sentences based on the French given for translation.

Elementary German B

Applicants who enter for one of the three year courses may present one year's work in German in a secondary school. What is stated in regard to French applies to those who may present German instead of French.

History

Applicants may offer a preparation of American History, English History or Mediaeval and Modern History.

In American History applicants should be familiar with the early settlements in America, the colonies, their government, the customs of the people and events which led to the establishment of the United States. They should be informed concerning the causes and effects of the principal wars in which the country has been involved. They should be prepared to consider also questions requiring an elementary knowledge of Civil Government as well as historical facts connected with the growth of this country up to the present time.

For the subject of English History or Mediaeval and Modern History the course given in any reputable secondary school should give proper preparation. A course extending over a full year with not less than three periods a week will be accepted.

ELECTIVE SUBJECTS

History

If the applicant can present all three or any two branches of history specified he may include one as a required and the others in the list of elective subjects.

Physics

The applicant should be familiar with the fundamental principles of Physics, particularly those considered under the headings of Mechanics, Heat, Light, Electricity and Magnetism. Text book instructions should be supplemented by lecture table experiments. Wherever possible, the student should pursue a laboratory course, but for the present no applicant will be conditioned in this subject if he has not been able to carry on a laboratory course. Where a laboratory course is offered by a secondary school, it should cover at least twenty-five of those experiments listed in the syllabus of the College Entrance Examination Board. An applicant should present his note-book together with the certificate from the teacher under whom the work was performed.

Chemistry

Applicants must show evidence of their familiarity with the rudiments of Chemistry. Any course given in a secondary school organized to present instruction by means of text book or lecture together with co-related laboratory work will be considered as covering the requirements. The applicant's note-book with his original notes including description of experiments, apparatus used, reactions, observations, and deductions, must be accompanied by his instructor's certificate.

Importance will be placed upon manipulation and deductions as well as the general appearance and neatness of the note-book.

Solid Geometry

The usual theorems and constructions of good text books including the relations of planes and lines in space, the properties and measurement of prisms, pyramids, cylinders, and cones; the sphere and spherical triangles. The solution of original problems and the applications of the mensuration of surfaces and solids.

Trigonometry

The usual courses of instruction covered by the standard text books on Plane and Spherical Trigonometry will prepare an applicant sufficiently to meet this requirement.

Mechanical Drawing

The applicant must have pursued such a course in Mechanical Drawing that he will be familiar with the usual Geometrical Construction Problems, Projection of Points, Lines, Planes, and Simple Solids.

Importance is laid not only upon the accuracy with which the work is performed but upon the general arrangement, appearance, and care with which the plates are executed.

It should not be understood that work in this subject may be offered as the equivalent of the first term's work at the school.

Mechanic Arts

The usual courses offered by properly equipped preparatory schools will be accepted as suitable fulfilment of this requirement. Work should include instruction in the handling of both wood and metal working tools in the more simple practices of these arts.

Advanced French or German

In cases where applicants have pursued courses in French or German for more than two years, and have completed work which is more advanced than is included under Elementary French or German, they may offer the additional year as an elective.

English

In many secondary schools this subject is required during all of the four years, and where it is pursued to this extent the applicant may offer the fourth year's work as one of his elective subjects.

Spanish

Students offering Spanish should be familiar with elementary grammar, the common irregular verbs and be able to translate simple Spanish to English or English to Spanish. A preparation equivalent to three periods per week for two years will be acceptable.

GENERAL INFORMATION

Preparation

Particular stress should be laid upon a thorough grounding in mathematics including Algebra, Arithmetic and Plane Geometry, as these form the basis upon which the work of this school rests. While Solid Geometry is not required at the present time, the student will find a knowledge of this subject very valuable in his subsequent work and is strongly recommended to include this subject as one of his electives. A preliminary course in science, including Physics and Chemistry, serves to prepare the student's mind for the higher branches of these subjects and their application, but neither will be considered as the equivalent of the courses in these branches given in the school.

Advanced Standing

Candidates who may have received previous training in any of the subjects ordinarily taken in the regular course may present themselves for examination as per calendar. If a satisfactory rank be attained, they may elect such further work as their preparation will permit.

Attendance Card

At the beginning of each term all students must fill out and file with the Principal on blank forms which are provided, a formal application for such subjects as are required in his course and for which he is sufficiently prepared, subject to the approval of the Principal. When an attendance card is once approved, no change can be made except through the Principal.

Application Blanks

A blank form of application for admission may be found at the end of this bulletin. This should be properly filled out by all applicants whether entering upon certificate from a secondary school or presenting themselves for examination.

Fees

For students entering in September 1918 and thereafter the fee for the day course is \$155 per year for residents of Massachusetts. For non-residents the fee for all courses is \$205 per year. The fee for students from foreign countries is \$305 per year.

Three-fifths of the fee is charged for a single term. The first term's tuition is payable on or before October 10, the balance on or before February 10, of each year. *No bills will be sent.* After payment is made no fee or part thereof can be returned, except by special action of the Trustees.

Special students pay, in general, the full fee, but if a course be taken involving attendance at the school during a limited time, application may be made to the Principal for a reduction.

Students must provide their own books, stationery, tools, etc., and pay for any breakage or damage that they cause. The above fee includes free admission for any day students desiring to attend any of the evening classes in which there is accommodation.

For all first year students a minimum deposit of \$20 is required to cover the cost of breakage, supplies, and apparatus and chemicals used in the chemical laboratory, the unexpended balance to be returned to the student at the end of the year.

For all students in second, third and fourth years taking work in Chemistry and Dyeing Laboratories a deposit of \$20 for the first term and \$20 for the second term is required. The unexpended balance will be returned at the end of the year.

Fees are strictly payable in advance, and students whose fees remain unpaid after the above mentioned dates will not be admitted to classes.

All deposits must be made before students can be admitted for laboratory work.

Examination

Intermediate examinations are held every five weeks and these serve to inform the student concerning his standing and the progress made.

Formal examinations are held at the end of each term.

In general, the examinations cover the work of the preceding term, but at the discretion of the instructor may include work of earlier terms.

Examinations for students conditioned in first term subjects are held in May and examinations for students conditioned in the Final Examinations are held in September following.

If a student fails to clear a condition at the time appointed, he will be required to repeat or drop the subject; and he cannot be admitted to subjects dependent thereon.

Daily work and regularity of attendance are considered in making up the reports of standing.

Continued or persistent absence or tardiness from the classes is considered reason to exclude a student from the class.

Records and Reports of Standing

Twice during each term informal reports are sent to all parents or guardians and to students who are of age; and at the end of each term formal reports are made.

The daily work of the student forms an important part of his record, and no pupil will be awarded the diploma or degree unless this portion of his record is clear.

Books are prescribed for study, for entry of lecture notes and other exercises, and are periodically examined by the lecturers. The care and accuracy with which these books are kept are considered in determining standing.

Thesis

Each candidate for the degree of the school must file with the Head of the Department in which the thesis is taken and not later than May 15, a report of original investigation, or research, written on a good quality of paper, 8 x 10 inches, with one inch margin at left, and 1-2 inch at right of each page; such thesis to have been previously approved by the head of the department in which it was made.

For all candidates for the diploma this requirement will be optional on the part of the school.

Graduate Course

Graduates of technical courses of other schools are invited to communicate with the Principal with reference to special courses in the textile studies. Previous training in the sciences and the engineering branches will usually reduce materially the time necessary to complete any of the courses at this school. The advantages offered to such persons for special research work are unexcelled, and a most profitable course may be arranged.

Partial Courses

While it is assumed that in general every student will pursue some one of the regular courses it is recognized that there may be some who because of special vocations or limited time desire to obtain instruction

in certain particular subjects. Facilities and special courses will be provided for such applicants within the limits of schedule arrangements and required preparation. For subjects and preparations see page 80.

Applicant must present satisfactory evidence by examination or otherwise that he is qualified to pursue with profit the subjects chosen.

For a number of years the school has had students who have specialized in Textile Design, Decorative Art, Cloth Analysis, Weaving and Finishing. While no specified limit is given for this course the usual time has been three years. It is expected that students taking this course will devote all of the regular school session to these subjects and failure to attend, continued tardiness, lack of application or progress will be considered sufficient reasons to demand his withdrawal from the school.

Special Awards of Merit

For several years a friend of the school has offered prizes in the form of books to be awarded to the successful candidates on graduation day. The prizes are continued each year. The conditions in detail are as follows:

First:—Ten dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship in First Year Chemistry.

Second:—Five dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship in First Year Chemistry.

Third:—Ten dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during his second year.

Fourth:—Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during his second year.

Fifth:—Twenty dollars to the regular student in the Chemistry and Textile Coloring Course who shall present the best Thesis preparatory to graduation.

The above mentioned sums are to be invested in books which may be selected after graduation. In case no one is considered worthy of any particular scholarship prize or if there is no competition, the same may be withheld. The decision in such case shall rest with the judges.

Degrees

The degree of Bachelor of Textile Engineering will be awarded for the completion of the four-year course in Textile Engineering. The degree of Bachelor of Textile Chemistry will be awarded for the completion of the four-year course in Chemistry and Textile Coloring.

Diploma

For the present the diploma of the School will be awarded upon the satisfactory completion of any one of the regular three year courses. In cases where students obtain advanced standing at least one year's attendance is required before the diploma can be obtained.

Medals of Honor

The National Cotton Manufacturers' Association offers annually a medal to that member of the graduating class who shall have during his course attained the highest standing in the special subjects required by the vote of the association.

Attendance

All regular students must attend all exercises of their course. Special students must attend exercises as per their Tabular View.

In case of absence explanation must be made to the instructor or the Head of the Department. The effect of such absence upon a student's standing in the respective study will rest with the Head of the Department subject to the approval of the Principal.

If a student absents himself from any department to such an extent that in the mind of the Head of the Department he is endangering his standing, he shall be reported to the Principal.

If he continues his non-attendance, he may be required to drop the subject and repeat it the following year.

If he is reported from several departments on account of non-attendance, he may be suspended from the school for the remainder of the school year.

Conduct

Students are required to return to the proper place all instruments or apparatus used in experimental work and to leave all machinery and apparatus with which they may experiment clean and in working order. All breakages, accidents, or irregularities of any kind must be reported immediately to the head of the department, or instructor in charge.

In case of either day or evening students, irregular attendance, lack of punctuality, neglect of either school or home work, disorderly or ungentlemanly conduct or general insubordination, are considered good and sufficient reasons for the immediate suspension of a student, and a report to the Trustees for such action as they deem necessary to take.

It is the aim of the Trustees so to administer the discipline of the school as to maintain a high standard of integrity and a scrupulous regard for trust. The attempt of any student to present as his own, work which he has not performed, or to pass any examination by improper means, is regarded by the Trustees as a most serious offense and renders the offender liable to immediate suspension or expulsion. The aiding or abetting of a student in any dishonesty is also held to be a grave breach of discipline.

Any student who violates these provisions will be immediately suspended by the Principal and the case reported at the following meeting of the Trustees for action.

Young men abounding in vitality when suddenly cut loose from home and established social environment to acquire an education at a residential school, need especially the careful direction of more mature minds in the formation of new associates. The management of all residential schools are aware that this fact is the cause of considerable anxiety on the part of parents and guardians. The responsibility thus placed upon those under whose care these pupils are committed is profoundly recognized.

The public schools are for boys and girls, the college for youth, the higher technical and professional schools of medicine, law, engineering, etc., are for men. It is now fully recognized that the fundamental idea of the general educational system, from the kindergarten to the college inclusive, should be the development and establishment of character, and it is therefore expected that those entering the technical schools will have made some progress in self-respect, self-denial and self-control. They enter substantially upon their life work when they matriculate at the higher technical schools and may be placed on their honor as to conduct and not be subject to an irritating and humiliating system of espionage outside of school hours.

In place of such espionage it is the policy of technical schools to rely mainly upon the discipline of the work of the course in connection with facilities for physical exercise in the various athletic games and sports, for which ample provision has been made at this school.

Pupils often err in conduct from thoughtlessness and lack of experience rather than through wilfulness, and unconsciously fall into bad habits because of the lack of intelligent warning and instruction. For this reason, it is proposed to give thorough instruction by lectures, covering the subjects of hygiene, the preservation of physical vigor, morals, thrift and the duties of citizenship. A careful scrutiny will also be maintained by the instructing staff in order to detect in the students any tendency of relaxation in the work or attendance, and all reasonable efforts will be made to maintain a high standard of scholarship and morals.

Library and Reading Room

That the students may have surroundings conducive to reading and study a moderate sized reading room with library tables and chairs has been provided. The library shelves contain textile, art, engineering and scientific publications. These are increased from time to time as new technical books of value to textile students are issued from the press. The leading textile papers are kept on file for ready reference.

Sessions

The regular school sessions are in general from 8.45 a. m. to 12.45 p. m., and from 1.45 to 4.45 p. m. daily, except Saturday when there is no session of the school. The office will be closed on Saturday afternoon.

A tabular view designates the hours at which the various classes meet. This is rigidly adhered to and the student is marked for this attendance and work as therein scheduled.

Residence and Expenses

Students from a distance, requiring rooms and board in the city, may if they desire, select the same from a list which is kept at the School.

The cost of rooms and board in a good district is from \$9.00 per week upwards.

All raw stock and yarn provided by the School, and all the productions of the School remain, or become, the property of the Trustees, except by special arrangement, but each student is allowed to retain specimens of yarn or fabrics that he has produced, if mounted and tabulated in accordance with the requirements of the school. It is understood that the Trustees may retain in the school such specimens of students' work as they may determine.

Lockers are provided for the use of the students, sufficiently capacious to contain clothing, books and tools. Special keyless padlocks are provided and the student is required to make a deposit of 75 cents. At the end of the year 50 cents will be refunded if the locker and lock are surrendered in good condition.

No books, instruments, or other property of the school are loaned to the student to be removed from the premises except by special permission.

Awards

Gold Medal, Paris Exposition, 1900, for general excellence. A special Medal, Merchants and Manufacturers Exposition, Boston, 1900. The Pan-American Medal awarded to the School, 1901. Gold Medal, Louisiana Purchase Exposition, 1904, Gold Medal, Lewis and Clarke Centennial Exposition, 1905. Medal of Honor from Panama-Pacific International Exposition, 1915.

Bulletins and Catalogues

All students registering and paying the regular fee for the course selected are entitled to the Bulletins and Catalogues when issued.

Courses of Instruction

Since its establishment, the Lowell Textile School has offered courses, each of which extends over a three year period. With the development of the school and close study of the problems presented to the graduates it has been believed that attention should be given those branches of instruction which would give breadth of training as well as establish fundamental principles. This policy has resulted in extending the curriculum to such length that the need for an additional year's instruction was evident.

The fact was also appreciated that to carry on the more advanced work a better preparation must be demanded of the applicant for entrance.

Nevertheless it was recognized that many young men seeking employment in the textile industry do not care, or are not in a position to devote four years to scholastic preparation, and for these the regular three year courses are offered.

These courses are designated as :—

Cotton Manufacturing.

Wool Manufacturing.

Textile Design (General Textile Course).

At the completion of any one of these the regular diploma of the school is awarded.

In general it is assumed that students pursuing these courses will not take the advanced work of the fourth year. However, if a student electing one of the three year courses desires to change to one of the four-year courses he may do so providing his preparation and undergraduate standing permits of it.

The four year courses are :—Textile Engineering, Chemistry and Textile Coloring. At the completion of these courses the degrees of Bachelor of Textile Engineering (B. T. E.) and Bachelor of Textile Chemistry (B. T. C.) are conferred. Three options are offered in the Engineering Course, viz: General Textile, Cotton Manufacturing, or Wool Manufacturing.

Each of these courses is planned to train one in the fundamental principles of science found to be applicable in the particular fields of Textile Chemistry and Textile Engineering. It is maintained that for one to be successful in either of these important branches of industry, a training is required as thorough and broad as that of any of the recognized branches of engineering or of applied science.

With this in mind these courses have been built of a secure framework of science and mathematics, and to it has been added the useful application of these branches in the broad textile field. With the direct purpose of laying a secure foundation in the training a more extended preparatory course is first demanded, and subsequently in the school work more subjects of a general character are included, that narrowness of judgment and observation may not result by over stimulation of the technical development.

COURSES FOR WOMEN

Although all classes are open to women the courses which have appealed especially to their tastes have been Textile Designing and Decorative Art to which they have added in some cases some instruction in Power Weaving and Finishing. These special courses have in general been followed for three years and in some cases have led the students to positions either in the mill office or in some commercial lines that have been desirable and have offered congenial work.

As the school work is made special to meet the needs of each case, no prescribed course of study is given in this catalogue. Inquiries should be made of the Principal.

Within the last few years the possibilities for women in certain branches of textile chemistry have become recognized and it is believed that in the future the positions open to them will become more and more numerous.

GOVERNMENT POSITIONS

With the entry of the United States into the present war, there was an urgent demand upon the part of all departments of the United States government for technically trained men and they sought both undergraduates and graduates of this school.

The character of the work required in the two degree courses of Textile Engineering and Chemistry and Textile Coloring warrant the Engineering Bureau of the War Department, after recommendation by the Federal Bureau of Education, to place this school on the approved list of technical schools of the United States. This means that students of these courses who have a scholastic standing placing them in the upper third of their class may enlist in the Engineers' Reserve Corps of the United States army, and upon acceptance, will be allowed to continue their studies until graduation, when they automatically enter this branch of the service.

During the past week or ten days a detail of officers from the engineering department of the navy have enlisted a number of the students in the Naval Reserve Corp. This arrangement also permits such students to continue their subjects until graduation, when they are automatically in the Reserve Corps of the engineering branch of the navy, and after suitable intensive training are in line for commission of ensign.

It is very probable that commencing the next school year the War Department will make provision so that students in technical schools may continue their course without interruption until graduation, except in case of emergency. In this case the Lowell Textile School will be included in the class of higher technical institutions.

The United States Civil Service Commission recognizes graduates from the degree courses of this school as proper applicants for various positions requiring a knowledge of applied science and engineering, as well as a knowledge of textile manufacturing for examinations in various departments of the government as offered from time to time.

Courses

In the column headed "Hours of Exercise" the numbers represent for each particular subject the total hours required in school for a period of fifteen weeks.

The letter and number which follow the subjects indicate the department in which the subject is given and the number of the subject in that department. For detailed description of the same, see page 81.

The departments are indicated as follows:

Textile Engineering	B	Cotton Yarns	F
Chemistry and Dyeing	C	Woolen and Worsted Yarns	G
Textile Design and Power		Finishing	H
Weaving	D	Physical Culture	I
Languages and History	E		

By referring to the letter and number indicated under "Preparation" the student can ascertain what subjects are necessary in order that he may have a clear understanding of the subject which he is scheduled to take.

FIRST YEAR

FIRST TERM

(Common to all courses)

	Hours of Exercise
Mechanism B-3	60
Mechanical Drawing B-7	75
Mathematics B-1	45
Textile Design D-1	75
Elementary Chemistry C-1	150
English E-1	30
Elementary German E-2 or Elementary French E-4	30
Physical Culture I-1	30

SECOND TERM

	Course VI	Course IV
Mechanism B-3	45	45
Mechanical Drawing B-8—B-9	105	30
Mechanical Laboratory B-6	45	—
Mathematics B-1	45	45
Textile Design D-1	60	30
Elementary Chemistry C-1	75	75
Cotton Yarn F-1 or Wool Yarn G-1	60	
English E-1	30	30
Elementary German E-2		30
Elementary French E-4 or Elementary German E-2	30	
Physical Culture I-1	30	30
Qualitative Analysis C-2	—	180
Stoichiometry C-3	—	30

For second term subjects in courses I, II and III see pages 69, 71, 73.

COURSE I.—COTTON MANUFACTURING

The Cotton Manufacturing Course is designed for students contemplating a career in the manufacturing of cotton yarns and cloth or allied industries and who wish to devote but three years to the school work.

During the first term, the studies are common to all courses and include instruction in mechanism, mathematics, mechanical drawing, textile design and elementary chemistry. Laboratory work supplements the lectures in chemistry and hand loom weaving assists in illustrating the principles of textile design. At the commencement of the second term instruction in the preliminary processes of yarn manufacturing is given.

The work in the Cotton Yarn Department comprises instruction in all the manufacturing processes from the bale to the finished yarn. The instruction is given by means of lectures upon the machines and processes, and by laboratory work upon the machines themselves. In the laboratory each student is required to make exhaustive tests upon each machine and to make as many settings and adjustments as possible. The third year's work in this department is largely devoted to lectures upon the manufacture of specialties, waste products, etc., and special laboratory work, special tests upon yarns and fabrics, mill planning with regard to the arrangement of machinery and other work of an advanced nature.

The course in chemistry consists of lecture and laboratory work on inorganic and organic chemistry followed by instruction in textile chemistry and dyeing, including a short course in the dyeing laboratory.

The work in mechanism serves as a basis for all future machine and mechanical work and is followed by steam engineering, electricity, and mill engineering. The mechanical drawing taken in connection with these subjects augments this instruction as well as provides opportunity for students to become skilled in drafting.

The course in textile designing, cloth analysis, and cloth construction includes lectures on plain and fancy weaves and Jacquard work, the analysis of all commercial fabrics, and designs for the same. During the third year of this course students in this department specialize on cotton fabrics.

Power weaving is taken up during the second and third years. Commencing with lectures and practice upon plain looms, the student is taken through dobby and box-loom weaving and Jacquards.

A course in knitting taken during the third year includes the manufacture of hosiery and underwear. There is also a course on the finishing of cotton fabrics which is given by lectures and laboratory work.

For detailed description of the subjects see page 81.

COURSE II.—COTTON MANUFACTURING

(For First Term See Page 67)

FIRST YEAR

SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary Chemistry	C-1 75
Mechanical Drawing	B-8 90	Elementary German or	E-2 30
Mathematics	B-1 30	Elementary French	E-4
Textile Design	D-1 75	Physical Culture	I-1 30
Cotton Yarn Manufacture	F-1 105	English	E-1 30

SECOND YEAR

FIRST TERM

Cotton Yarn Manufacture	F-1 225	Machine Drawing	B-10 30
Textile Design	D-2 60	Steam Engineering	B-12 30
Power Weaving	D-9 30	Weaving Mechanism	B-5 30
Textile Chemistry and Dye- ing Lectures	C-9 45	Physics	B-11 45
		Industrial History	E-6 15

SECOND TERM

Cotton Yarn Manufacture	F-1 165	Steam Engineering	B-12 15
Textile Design	D-2 60	Machine Drawing	B-10 45
Power Weaving	D-9 75	Strength of Materials	B-17 30
Textile Chemistry and Dye- ing Laboratory	C-11 75	Physics	B-11 45
		Industrial History	E-6 15

THIRD YEAR

FIRST TERM

Cotton Yarn Manufacture	F-1 173	Power Weaving	D-10 127
Knitting	F-2 30	Cotton Finishing	H-2 67
Textile Design, Cloth Con- struction	D-6, 7 53	Electricity	B-20 30
		Mill Engineering	B-21 30

SECOND TERM

Cotton Manufacture	F-1 225	Mill Engineering	B-21 45
Knitting	F-2 45	Power Weaving	D-10 90
Textile Design, Cloth Con- struction	D-6, 7 45	Cotton Finishing	H-2 75
		Thesis	

COURSE II.—WOOL MANUFACTURING

The course of Wool Manufacturing is arranged for those who contemplate a career in the manufacture of woollen or worsted fabrics and can devote but three years to the school work. It includes instruction on all of the varied processes employed in adapting the wool fibre to cloth, namely,—sorting, scouring, carding, combing, spinning, designing, weaving, dyeing and finishing. The work is carried on by lectures, recitations and practical work in the laboratories.

Following the first term of the first year, which is common to all courses, the student commences work in the Woollen and Worsted Laboratory, and through systematic steps becomes acquainted with the machines employed in the first steps of yarn manufacturing. At the same time lectures are given upon the many kinds of wool, variation in quality, grades, uses, etc., as influenced by the locality where grown. This is followed by practical work on the sorting table.

The second and third years cover spinning of woollen yarn and worsted yarn by the Bradford and French systems, also the manufacture of tops, including combing, gilling and back washing. Scouring and carbonizing are taken up in detail by lectures and by practical work.

The general chemistry of the first year is followed by textile chemistry and dyeing in the second year. This includes a short course in the Dyeing Laboratory.

Textile design, cloth analysis and construction are continued from the first year throughout the course, the work being applied especially to woollen and worsted goods. Weaving on power looms commences in the second year and continues through the third.

Lectures on finishing commence with the third year and are augmented by extensive practice with the machines in the Finishing Department.

Work in the Engineering Department extends throughout all three years and includes mechanical drawing, properties of saturated steam and electricity. The practical application of the principles studied in these subjects is brought out forcibly in the work on mill engineering, where mill designs and construction are considered. A short course covering methods employed in the testing of fibres, yarns and cloths, together with laboratory work in the manipulation of certain physical apparatus, is given in the third year.

For detailed description of the subjects see page 81.

COURSE II-3.—WOOL MANUFACTURING

(For First Term See Page 67)

FIRST YEAR

SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary Chemistry	C-1 75
Mechanical Drawing	B-8 90	Elementary German or	E-2
Mathematics	B-1 30	Elementary French	E-4 30
Textile Design	D-1 75	Physical Culture	I-1 30
Wool Yarn Manufacture	G-1 105	English	E-1 30

SECOND YEAR

FIRST TERM

Woolen and Worsted Yarn		Machine Drawing	B-10 30
Manufacture	G-1 225	Steam Engineering	B-12 30
Textile Design	D-3 60	Weaving Mechanism	B-5 30
Power Weaving	D-9 30	Physics	B-11 45
Textile Chemistry and Dye- ing Lectures	C-9 45	Industrial History	E-6 15

SECOND TERM

Woolen and Worsted Yarn		Steam Engineering	B-12 15
Manufacture	G-1 165	Machine Drawing	B-10 45
Textile Design	D-3 60	Strength of Materials	B-17 30
Power Weaving	D-9 75	Physics	B-11 45
Textile Chemistry and Dye- ing Laboratory	C-11 75	Industrial History	E-6 15

THIRD YEAR

FIRST TERM

Woolen and Worsted Yarn		Power Weaving	D-10 172
Manufacture	G-1 128	Woolen and Worsted	
Knitting	F-2 30	Finishing	H-1 75
Textile Design, Cloth Con- struction	D-6, 7 45	Electricity	B-20 30
		Mill Engineering	B-21 30

SECOND TERM

Woolen and Worsted Yarn		Mill Engineering	B-21 45
Manufacture	G-1 195	Power Weaving	D-10 90
Knitting	F-2 45	Woolen and Worsted	
Textile Design, Cloth Con- struction	D-6, 7 75	Finishing	H-1 75

COURSE III.—TEXTILE DESIGN

(General Textile Course)

The general course in Textile Design is planned to meet the demand of young men for a technical training in the general processes of textile manufacturing, but with particular reference to the design and construction of fabrics. To this end a foundation is laid in the first year by instruction in the elementary principles of designing, decorative art and weaving. That he may later in the course pursue to advantage instruction in yarn manufacturing, weaving, dyeing, finishing and some engineering problems, a foundation course in mechanics, mathematics and chemistry is laid. As the student is required to pursue courses in the yarn departments, both cotton and wool, he acquires a knowledge of the manufacture of cotton yarns from the bale to the yarn and of woolen and worsted yarns from the fleece through the varied processes of manufacturing woolen yarn or worsted yarn by both the French and Bradford systems.

Throughout his entire course he receives instruction in design, cloth analysis and construction of all the standard cloths, viz.—trouserings, coatings, suitings, blankets, velvets, corduroys, plushes, etc. This is followed by advanced work in Jacquard designing and weaving which serves not only to acquaint the student with the many kinds of cotton, woolen, worsted, and silk fabrics of figured design, but stimulates and develops any artistic talent he may possess. Decorative Art becomes an important part of the work of the second and third years.

The course in general inorganic and organic chemistry of the first year leads to the subjects of textile chemistry and dyeing in the second year. The instruction includes a short course in the dyeing laboratory.

Power weaving commences with the second year and continues throughout the course and work on all types of looms is required.

During the third year the student receives instruction in the finishing of cotton goods and woolen and worsted cloths. This instruction is given by means of lecture and laboratory work.

The engineering subjects given in the second and third years are intended to acquaint the student with such general knowledge as will be of assistance should he be called upon in later life to be a mill manager or should his subsequent progress lead to some executive position in the operation of a textile plant.

For detailed description of the subjects see page 81.

COURSE III.—TEXTILE DESIGN

(General Textile Course)

(For First Term See Page 67)

FIRST YEAR

SECOND TERM

	Hours of Exercise		Hours of Exercise
Mechanism	B-3 45	Elementary Chemistry	C-1 75
Mechanical Drawing	B-8 90	Elementary German or	E-2
Mathematics	B-1 30	Elementary French	E-4 30
Textile Design	D-1 120	Physical Culture	I-1 30
Cotton Yarn Manufacture	F-1 60	English	E-1 30

SECOND YEAR

FIRST TERM

Textile Design, Decorative Art, Hand Loom Weav- ing	D-2, 3, 4, 5 135	Machine Drawing	B-10 30
Cotton Yarn Manufacture	F-1 113	Steam Engineering	B-12 30
Power Weaving	D-9 67	Weaving Mechanism	B-5 30
Textile Chemistry and Dye- ing Lectures	C-9 45	Physics	B-11 45
		Industrial History	E-6 15

SECOND TERM

Textile Design, Decorative Art, Hand Loom Weav- ing	D-2, 3, 4, 5 135	Textile Chemistry and Dye- ing Laboratory	C-11 60
Wool Yarn Manufacture	G-1 105	Steam Engineering	B-12 15
Power Weaving	D-9 75	Strength of Materials	B-17 30
Machine Drawing	B-10 45	Physics	B-11 45
		Industrial History	E-6 15

THIRD YEAR

FIRST TERM

Textile Design, Cloth Con- struction, Decorative Art	D-6, 7, 8 120	Power Weaving	D-10 143
Woolen and Worsted Yarn Manufacture	G-1 112	Woolen and Worsted Finishing	H-1 75
Mill Engineering	B-21 30	Cotton Finishing	H-2 30
		Electricity	B-20 30

SECOND TERM

Textile Design, Cloth Con- struction, Decorative Art	D-6, 7, 8 180	Power Weaving	D-10 150
Woolen and Worsted Yarn Manufacture	G-1 75	Woolen and Worsted Finishing	H-1 75
Mill Engineering	B-21 45	Cotton Finishing	H-2 67
		Thesis	

COURSE IV.—CHEMISTRY AND TEXTILE COLORING

The Four Year Course in Chemistry and Textile Coloring leading to the degree of B. T. C. is especially intended for those who wish to engage in any branch of Textile Chemistry, Textile Coloring, Bleaching, Finishing, or the manufacture and sale of the dyestuffs or chemicals used in the textile industry. The theory and practice of all branches of dyeing, printing, bleaching, scouring, and finishing are taught by lecture work supplemented with a large amount of experimental laboratory work and actual practice in the dye-house and finishing room.

The underlying theories and principles of chemistry are the same no matter to what industry the application is eventually made. Furthermore, no industry involves more advanced and varied applications of the science of chemistry than those of the manufacture and application of the coal-tar coloring matters. In addition, the Textile Colorist must consider the complex composition of the textile fibres, and the obscure reactions which take place between them and the other materials of the textile industry.

During the first year General Chemistry including both Inorganic and Organic is taught by lectures and laboratory work, and this is supplemented during the second term by Qualitative Analysis and Stoichiometry.

Advanced Inorganic Chemistry as well as Advanced Organic Chemistry are studied during the second and third year as a continuation of the Elementary Chemistry of the first year, and much time is spent upon Quantitative Analysis, Industrial Chemistry, and Textile Chemistry and Dyeing.

The foundation work in General Chemistry is continued during the third year with courses in Physical Chemistry, Organic laboratory work, and analytical work. The subject of Industrial Chemistry is introduced and much time is devoted to Advanced Textile Chemistry, Dye Testing, Color Matching, Calico Printing, and Woolen, Worsted, and Cotton Finishing.

The fourth year is characterized by an endeavor to present certain subjects of a more applied nature in such a manner that the student's reasoning power and ability to apply the knowledge gained during the first three years may be developed to the fullest extent. The subject of Engineering Chemistry is introduced and the work in the Dyeing and Analytical laboratories is applied as far as possible to the actual requirements of the factory chemist and colorist. The student is given a thorough course in Microscopy, Photomicrography and the use of the various instruments such as the Spectroscope, Ultra-microscope, Polariscope, Tintometer, etc., which often prove of vital importance in the advanced study of Textile Chemistry. During this fourth year, the student devotes much time in the Organic Laboratory in the manufacture of dyestuffs. This is followed by some research work, or original investigation as time will permit. Upon this he must present a satisfactory thesis, or report, before receiving his degree.

For detailed description of the subjects see page 81.

COURSE IV.—CHEMISTRY AND TEXTILE COLORING

(For First Year See Page 67)

SECOND YEAR

FIRST TERM

	Hours of Exercise		Hours of Exercise
Advanced Inorganic Chemistry	C-4 45	Stoichiometry	C-3 15
Textile Chemistry and Dyeing Lecture	C-9 45	Quantitative Laboratory	C-7 180
Textile Chemistry and Dyeing Laboratory	C-10 68	Steam Engineering	B-12 30
Quantitative Analysis Lect.	C-7 15	Physics	B-11 45
		Industrial History	E-6 15
		Advanced German	E-3 30
		Power Weaving	D-9 22

SECOND TERM

Advanced Inorganic Chemistry	C-4 30	Quantitative Laboratory	C-7 165
Textile Chemistry and Dyeing Lecture	G-9 15	Advanced Organic Chemistry	C-5 30
Textile Chemistry and Dyeing Laboratory	C-10 150	Physics	B-11 45
Stoichiometry	C-3 15	Industrial History	E-6 15
Quantitative Lab. Lect.	C-7 15	Advanced German	E-3 30
		Steam Engineering	B-12 15

THIRD YEAR

FIRST TERM

Advanced Textile Chemistry and Dyeing Lecture	C-14 15	Quantitative Analysis Lab.	C-7 113
Advanced Textile Chemistry and Dyeing Lab.	C-14 195	Advanced Organic Chemistry Lecture	C-5 45
Industrial Chemistry	C-13 30	Technical German	C-21 30
Quantitative Analysis Lect.	C-7 15	Woolen and Worsted Finishing	H-1 67

SECOND TERM

Advanced Textile Chemistry and Dyeing Lecture	C-14 15	Physical Chemistry	C-8 30
Advanced Textile Chemistry and Dyeing Lab.	C-14 90	Technical German	C-21 30
Industrial Chemistry	C-12 30	Organic Laboratory	C-15 135
Woolen and Worsted Finishing	H-1 75	Quantitative Analysis Lect.	C-7 15
		Quantitative Analysis Lab.	C-7 105

FOURTH YEAR

FIRST TERM

Physical Chemistry	C-8 15	Quantitative Analysis and Industrial Analysis	C-17 98
Technical German	C-21 15	Dyeing Laboratory	C-14 60
Engineering Chemistry	C-16 15	Organic Laboratory	C-15 135
Advanced Textile Chemistry and Dyeing	C-14 30	Industrial Laboratory	C-12 30
Economics	E-7 30	Thesis	C-22 82

SECOND TERM

Organic Laboratory	C-15 105	Advanced Dyeing Conference	C-19 15
Microscopy	C-18 45	Economics	E-7 30
Thesis	C-22 165	Technical German	C-21 15
Dyeing Laboratory	C-14 75	Quantitative Analysis Lect.	C-7 15
Engineering Chemistry	C-16 15	Industrial Analysis	C-17 45

COURSE VI.—TEXTILE ENGINEERING

This course of four years training leading to the degree of Bachelor of Textile Engineering (B. T. E.), aims to meet, in the broadest possible manner, the increasing demands of the textile industry for men with adequate and specialized preparation. The magnitude and scope of the textile and allied industries fully justify the most thorough technical training possible for all who aspire to leadership in this field. Much of the future development of the textile industry will depend upon an intensive application of science to its needs and the possibilities are unlimited. The results of such application of scientific effort in other industries have been noteworthy and modern progress calls for similar action in all. The demand is already strong for broadly trained engineers who have a full appreciation of the details and problems of the processes of textile manufacturing.

The student is first thoroughly grounded in the fundamental principles of mathematics and science underlying all engineering and industrial work. In such preliminary subjects as mechanics, drawing, physics and mathematics, the practical uses of same are considered of first importance.

Much emphasis is laid on the study of power generation and transmission and courses with laboratory practice are given in steam and electrical engineering to familiarize the student with modern practice in these branches.

Systematic instruction in the most approved methods of machine shop practice is given in a shop fully equipped with modern tools and this feature of the course is considered a most valuable adjunct to the training of a textile engineer.

Thorough instruction in all of the various branches of textile manufacturing is provided for students pursuing this course. Among the subdivisions of these branches are textile designing, power weaving, cotton spinning, woolen and worsted spinning, dyeing, cotton and woolen finishing and textile testing.

The work in mill engineering covers a wide range of subjects including mill construction, mill fire protection, mill heating, lighting and humidifying and power transmission. The arrangement of machinery and plants for most efficient production and economical power distribution is also taken up in detail.

During the fourth year considerable time is given to questions of business administration, including the principles and application of scientific management and efficiency engineering, mill cost accounting and business law.

For detailed description of the subjects see page 81.

COURSE VI.—TEXTILE ENGINEERING

General Course

(For First Year See Page 67)

SECOND YEAR

FIRST TERM

	Hours of Exercise		Hours of Exercise
Textile Chemistry and Dye- ing Lectures	C-9 45	Graphic Statics	B-4 30
Physics	B-11 45	Engineering Laboratory	B-14 37
Mathematics	B-2 45	Weaving Mechanism	B-5 30
Machine Drawing	B-10 60	Shop Work	B-15 60
Steam Engineering	B-12 30	Cotton Yarn Manufacture	F-1 60
Power Weaving	D-9 45	Advanced German	E-3-5 30
		Industrial History	E-6 15

SECOND TERM

Physics	B-11 45	Shop Work	B-15 60
Mathematics	B-2 45	Wool Yarn Manufacture	G-1 105
Strength of Materials	B-4 30	Advanced German	E-3-5 30
Machine Drawing	B-10 75	Industrial History	E-6 15
Steam Engineering	B-12 30	Power Weaving	D-9 45
Engineering Laboratory	B-14 45		

THIRD YEAR

FIRST TERM

Electrical Engineering	B-19 68	Power Weaving	D-9 60
Machine Shop Practice	B-15 60	Mathematics	B-2 30
Engineering Laboratory	B-14 37	Mill Engineering	B-21 45
Woolen and Worsted Yarn Manufacture	G-1 97	Woolen and Worsted Finishing	H-1 68
Strength of Materials	B-17 30		

SECOND TERM

Hydraulics	B-13 15	Woolen and Worsted Yarn Manufacture	G-1 75
Electrical Engineering	B-19 105	Woolen and Worsted Finishing	H-1 30
Mill Engineering	B-21 60	Power Weaving	D-9 45
Machine Shop Practice	B-15 60	Strength of Materials	B-17 30
Engineering Laboratory	B-14 30		
Mathematics	B-2 30		
Power Plants	B-18 15		

FOURTH YEAR

FIRST TERM

Cotton Yarn Manufacture	F-1 30	Power Plants	B-18 15
Mill Engineering	B-21 90	Woolen and Worsted Yarn Manufacture	G-1 68
Electrical Engineering	B-19 67	Business Administration	E-8 90
Cotton Finishing	H-2 15	Thesis	75
Economics	E-7 30		

SECOND TERM

Cotton Yarn Manufacture	F-1 30	Business Administration	E-8 90
Mill Engineering	B-21 60	Textile Testing	G-2 30
Electrical Engineering	B-19 90	Woolen and Worsted Yarn Manufacture	G-1 60
Cotton Finishing	H-2 75	Thesis	45
Economics	E-7 30		

COURSE VI.—TEXTILE ENGINEERING

Cotton Option

(For First Year See Page 67)

SECOND YEAR

FIRST TERM

	Hours of Exercise		Hours of Exercise
Textile Chemistry and Dye- ing Lectures	C-9 45	Graphic Statics	B-4 30
Physics	B-11 45	Weaving Mechanism	B-5 30
Mathematics	B-2 45	Shop Work	B-15 60
Machine Drawing	B-8 30	Cotton Yarn Manufacture	F-1 60
Engineering Laboratory	B-14 37	Cotton Design	D-2 30
Steam Engineering	B-12 30	Advanced German	E-3, 5 30
		Industrial History	E-6 15
		Power Weaving	D-9 45

SECOND TERM

Physics	B-11 45	Cotton Yarn Manufacture	F-1 105
Mathematics	B-2 45	Cotton Design	D-2 30
Strength of Materials	B-4 30	Power Weaving	D-9 45
Machine Drawing	B-8 45	Advanced German	E-3, 5 30
Steam Engineering	B-12 30	Industrial History	E-6 15
Shop Work	B-15 60	Engineering Laboratory	B-14 45

THIRD YEAR

FIRST TERM

Electrical Engineering	B-19 68	Power Weaving	D-9 60
Machine Shop Practice	B-15 60	Engineering Laboratory	B-14 37
Mill Engineering	B-21 45	Mathematics	B-2 30
Cotton Yarn Manufacture	F-1 97	Strength of Materials	B-17 30
Cotton Design	D-6, 7 68		

SECOND TERM

Hydraulics	B-13 15	Cotton Design	D-6, 7 30
Electrical Engineering	B-19 105	Power Weaving	D-9 45
Machine Shop Practice	B-15 60	Engineering Laboratory	B-14 30
Mill Engineering	B-21 60	Mathematics	B-2 30
Cotton Yarn Manufacture	F-1 75	Strength of Materials	B-17 30

FOURTH YEAR

FIRST TERM

Mill Engineering	B-21 90	Cotton Finishing	H-2 15
Electrical Engineering	B-19 67	Business Administration	E-8 90
Cotton Yarn Manufacture	F-1 98	Economics	E-7 30
Power Plants	B-18 15	Thesis	60
Cotton Design	D-6, 7 45		

SECOND TERM

Cotton Yarn Manufacture	F-1 90	Textile Testing	G-2 30
Mill Engineering	B-21 60	Cotton Finishing	H-2 75
Electrical Engineering	B-19 90	Business Administration	E-8 90
Economics	E-7 30	Thesis	45

COURSE VI.—TEXTILE ENGINEERING

Wool Option

(For First Year See Page 67)

SECOND YEAR

FIRST TERM

	Hours of Exercise		Hours of Exercise
Textile Chemistry and Dye- ing Lectures	C-9 45	Shop Work	B-15 60
Physics	B-11 45	Woolen and Worsted Yarn Manufacture	G-1 60
Mathematics	B-2 45	Woolen and Worsted Design	D-3 30
Machine Drawing	B-8 30	Advanced German	E-3, 5 30
Engineering Laboratory	B-14 37	Industrial History	E-6 15
Steam Engineering	B-12 30	Power Weaving	D-9 45
Graphic Statics	B-4 30		
Weaving Mechanism	B-5 30		

SECOND TERM

Physics	B-11 45	Woolen and Worsted Yarn Manufacture	G-1 105
Mathematics	B-2 45	Woolen and Worsted Design	D-3 30
Strength of Materials	B-4 30	Power Weaving	D-9 45
Machine Drawing	B-8 45	Advanced German	E-3, 5 30
Steam Engineering	B-12 30	Industrial History	E-6 15
Shop Work	B-15 60		
Engineering Laboratory	B-14 45		

THIRD YEAR

FIRST TERM

Electrical Engineering	B-19 68	Woolen and Worsted Finishing	H-1 68
Machine Shop Practice	B-15 60	Power Weaving	D-9 60
Mathematics	B-2 30	Engineering Laboratory	B-14 37
Mill Engineering	B-21 45	Strength of Materials	B-17 30
Woolen and Worsted Yarn Manufacture	G-1 97		

SECOND TERM

Hydraulics	B-13 15	Woolen and Worsted Yarn Manufacture	G-1 75
Electrical Engineering	B-19 105	Woolen and Worsted Finishing	H-1 30
Mill Engineering	B-21 60	Power Weaving	D-9 45
Machine Shop Practice	B-15 60	Strength of Materials	B-17 30
Engineering Laboratory	B-14 30		
Mathematics	B-2 30		
Power Plants	B-18 15		

FOURTH YEAR

FIRST TERM

Mill Engineering	B-21 90	Business Administration	E-8 90
Electrical Engineering	B-19 67	Power Plants	B-18 15
Worsted Yarn Manufacture	G-1 113	Economics	E-7 30
Woolen and Worsted Design	D-6, 7 45	Thesis	60

SECOND TERM

Mill Engineering	B-21 60	Economics	E-7 30
Electrical Engineering	B-19 90	Business Administration	E-8 90
Worsted Yarn Manufacture	G-1 135	Textile Testing	G-2 30
Woolen and Worsted De- sign	D-6, 7 30	Thesis	45

ENTRANCE REQUIREMENTS

The requirements for admission to this school are given in detail on page 52.

DIPLOMA COURSES—REQUIRED SUBJECTS

- A-1 Plane Geometr^y
- A-2 Algebra (A1, A2)
- A-3 Elementary German A
- or
- A-4 Elementary French B
- A-5 English
- A-6 History
- A-7 Arithmetic

DEGREE COURSES—REQUIRED SUBJECTS

- A-1 Plane Geometry
- A-2 Algebra
- A-3 Elementary German A
- or
- A-4 Elementary French A
- A-5 English
- A-6 History

DEGREE COURSES—ELECTIVE SUBJECTS

- A-8 Physics
- A-9 Chemistry
- A-10 Solid Geometry
- A-11 Trigonometry
- A-12 Mechanical Drawing
- A-13 Mechanic Arts
- A-14 History
- A-15 Advanced German
- or
- A-16 Advanced French

Subjects of Instruction

TEXTILE ENGINEERING DEPARTMENT—B

Mathematics

(Algebra, Trigonometry, Elements of Analytical Geometry)—B-1

PREPARATION: A-1, A-2

This subject is given in the first year with the view of consolidating the separate branches of mathematics that have been given in previous years. The progress of the school has been such as to necessitate the introduction of Higher Algebra and Trigonometry, in the early part of the first term, and hence, as in other technical schools, it has resulted in a combined course. This course is presented by means of lectures, text-book, class and problem work, and consists essentially of the following: Progressions, Graphical Representation, Permutations and Combinations, Logarithms, Slide Rule, Trigonometry, Binomial Theorem, Partial and Continued Fractions, Series, Theory of Equations, Significant Figures, and Plotting of Scientific Data, Straight Line Equations, Point of Division of a Line, Equation of Parallel and Perpendicular Lines.

[ALL COURSES]

Mathematics

**(Analytical Geometry, Differential Calculus, Elements of
Integral Calculus)—B-2**

PREPARATION: B-1

This course is a continuation of the work of the first year, and treats of the following subjects: Formulae of Differentiation, Conic Sections, Transformation of Co-ordinates, Maxima and Minima, Direction of Curves, Center and Radius of Curvature, Problems on Differential Calculus, Elements of Integral Calculus, Integration as a Summation, and Plane Areas. The above are treated in both Rectangular and Polar Co-ordinates. Formulae of Integration, Integration by parts, Integration by Substitution, Successive Integration, Evaluation of Integrals, Center of Gravity, Center of Pressure, Total Pressure, Moment of Inertia.

[COURSES IV, VI]

Mechanics and Mechanism—B-3

PREPARATION: A-1, A-2, B-1. TAKEN SIMULTANEOUSLY WITH B-1

These subjects are a necessary preparation for all courses and are taken in one hundred and five hours of lectures and recitations covering the whole of the first year. The fundamental principles of these subjects are considered of the greatest importance and the application and problems are selected with special reference to their practical uses in textile machinery. The large variety of mechanism applications met in textile machines makes this course an essential one as a proper preparation for the student's later work in spinning and weaving. Some of the subjects treated in this course are:

MECHANICS

Work, power and energy.
Principle of moments.
Simple and compound levers.
Differential and common pulleys.
Jack screw and worm and wheel.
Parallelogram and triangle of forces.
Inclined plane and wedge.

MECHANISM

Linear and angular velocity.
Belting calculations.
Gears and gear trains.
Cam and cone pulley design.
Linkage problems.
Differential and epicyclic trains.
Intermittent motions.

[ALL COURSES]

Graphic Statics—B-4

PREPARATION: B-1 AND B-3

The work in this course is presented by lecture and recitations. First are considered mathematical and graphical conditions for equilibrium for any system of forces and the subjects of center of gravity and funicular polygons are introduced. Then follow problems on bridge and roof trusses under various conditions of dead, live, wind and snow loading. Masonry arches are finally considered.

[COURSE VI]

Weaving Mechanism—B-5

PREPARATIONS B-1, B-3. TAKEN SIMULTANEOUSLY WITH D-19

This course consists of thirty lectures given during the first term of the second year and is required by all the regular students taking power weaving. A thorough analysis of all the important motions of power weaving is undertaken and the treatment is by graphical and analytical methods. The object of this course is to so familiarize the student with the theory of the mechanism of the loom that the time spent in the weave room on loom fixing will be used to the best advantage.

[COURSES I, II, III AND VI]

Mechanical Laboratory—B-6

PREPARATION: B-3. TAKEN SIMULTANEOUSLY WITH B-4

This work is given during the second term of the first year and is supplementary to the course in Mechanism. Especial importance is attached to the demonstration of the fundamental principles of these subjects. Some of the experiments and tests made in this course are as follows:

Determination of co-efficient of friction.

Proof of principle of moments.

Proof of principle of work.

Efficiency test of various hoisting and lifting appliances, such as tackle and fall, worm block, differential and triplex blocks, jack screws, wedges, etc.

Experimental proofs of the principles of graphic statics.

Efficiency tests on belt transmission including measurement of belt tensions, co-efficient of friction, slip, etc.

Tests on various types of absorption dynamometers.

Calibration of transmission dynamometer.

Power measurements on textile machinery with differential dynamometer.

Measurement of friction of steam engine.

[COURSE VI]

Mechanical Drawing—B-7

PREPARATION: A-1. TAKEN SIMULTANEOUSLY WITH B-3

This course is taken during the first year, and consists of work in the drawing room supplemented by lectures. This subject is considered of the greatest importance as a preparation for the student's future work and the practical usefulness of drawing of this character is fully emphasized. The course is systematically laid out covering in order the following divisions:

Care and use of drawing instruments.

Geometrical constructions.

Elements of projections and descriptive geometry.

Isometric projection.

Developments with practical applications.

Sketching practice on machine details.

[ALL COURSES]

Machine Drawing—B-8

PREPARATION: B-7

This work is the continuation of the mechanical drawing and is pursued throughout the second term of first year. This work is wholly of a practical character and includes sketching from the textile machinery details, working scale detail and assembly drawing, tracing and blue printing. The rudiments of machine design to supplement the work in strength of materials is also given.

[COURSES I, II, III, VI]

Machine Drawing—B-9

PREPARATION : B-7

For students electing Course IV in the second term of the first year a course of machine drawing is given similar to B-8 except that it is not as extensive and is concluded in thirty hours.

Machine Drawing—B-10

PREPARATION : B-3, B-7, B-8

During the second year the work in Machine Drawing is devoted to advanced graphical mechanism problems. The data for all of these problems is in every case taken directly from some of the textile machines that the students meet in other departments. These problems include cam designs for builder motions, mule scroll layouts, Scaife builder motion analysis, fly frame, cone design, mule quadrant motion, analysis of camless winder and a number of others of similar character.

[COURSES I, II, III, VI]

Physics—B-11

PREPARATION : B-1

This course is given during the second year and serves especially as a preparation for Steam Engineering, Hydraulics, Electricity and Optics. The subject is presented by means of lectures, recitations, problems, and reference books. The lectures deal chiefly with the application of the various physical laws in their adaption to the above subjects, while the reference books are used to supplement the lectures. The subjects taken up are essentially as follows: Gravitation, Moving Bodies, Mechanics, Elasticity, Hydrostatics, Elements of Hydraulics, Properties of Fluids and Gases and the Theory of Sound. These subjects are followed by a series of lectures on heat phenomena dealing with the Generation of Heat, Thermometry, Calorimetry, Transfer of Heat, its Effect on Solids, Liquids, and Gases, and problems such as lead to the Elements of Steam Engineering.

The latter part of the course is devoted to the discussion of the laws governing the Nature, Propagation and Transmission of light waves, special stress being laid on interference, reflection and refraction, mirrors, lenses, microscope, spectroscope and photometer. Particular attention is given to the color effects produced by the combination of different colors in connection with Maxwell's Color Diagram and the Young-Helmholtz Theory of Color Sensation. During the last part of the course the principles of Electricity and Magnetism are taken up in detail.

[ALL COURSES]

Steam Engineering—B-12

PREPARATION : B-11

The purpose of this work is to familiarize the student with the essentials of power generation and methods of modern practice in steam engineering.

The different types of boilers, engines, pumps, condensers, turbines, and other important features of a steam plant are first considered with reference to their construction and general arrangement. The remainder of the course is devoted to a thorough study of these elements of a power plant from the standpoint of the heat phenomena upon which their operation and efficient performance depend. Practice with the steam engine indicator is included in this work. Laboratory practice is given in engine and boiler testing.

[ALL COURSES]

Hydraulics—B-13

PREPARATION : B-3, B-11

This subject is presented by means of lectures covering the principles of hydraulics, including hydrostatics, measurements of flow of water through orifices, pipes, nozzles and over weirs. The different types of turbines are studied with results of tests and rating tables.

[COURSE VI]

Engineering Laboratory—B-14

PREPARATION : B-12

The principles underlying the subjects of Steam Engineering, Hydraulics and Thermodynamics are demonstrated in a practical manner in the work in the Engineering Laboratory. Greater importance is attached to the development of initiative and responsibility in the student than the mere accomplishment of a large number of carefully planned tests. The character of this work is indicated by the following list of experiments and tests:

Calibration of gages, thermometers, indicators, anemometers, tachometers, and other measuring instruments.

Experiments on flow of steam, calorimeter tests, radiation tests and pipe covering tests, injector and ejector tests, engine tests. Condensing and non-condensing. Steam pump tests, surface condenser tests, valve setting, boiler testing.

Tests on heating and ventilating fans, both motor and engine driven. Pump tests, triplex and centrifugal. Air compressor tests, flue gas analysis, steam turbine tests, condensing, non-condensing and low pressure. Complete steam plant testing. Gas engine testing.

[COURSE VI]

Machine Shop Practice—B-15

PREPARATION: B-3

Systematic instruction is given in the most approved methods of machine shop practice, the object being to familiarize the student with the proper use of hand and machine tools and the characteristics of the different materials worked. Particular attention is given to the form, setting, grinding, and tempering of tools and the mechanism of the different machines involving certain speeds, feeds, etc. The course is so planned that the instruction in each typical operation shall conform as nearly as possible to commercial machine shop practice on textile machinery. The list of tools which appears under Equipment in this bulletin gives an idea of the scope of the work which includes chipping and filing, tool grinding and tempering, straight and taper turning, screw cutting, drilling and boring, planer work; milling machine work, including gear cutting. Instruction is also given in the use of wood working tools, both hand and machine and in forging.

[COURSE VI]

Strength of Materials—B-17

PREPARATION: B-1 AND B-3

This is a short course consisting of thirty lectures given in the second year in which the elements of the subject are set forth. The main topics which are discussed are stress and strain, testing of materials, bending moments and shearing forces, beam design, column design, torsion, compound beams and columns, combined stresses. The course is largely preparatory for the third year work in Mill Engineering, and is followed in the third year of the degree course in Textile Engineering by further and more advanced work along similar lines.

[COURSES I, II, III, VI]

Power Plants—B-18

PREPARATION: B-12

This course, which consists of lectures given during the third and fourth year, takes up the fundamental consideration involved in the planning of a power plant for a textile mill. A standard text book is used in connection with the lectures and the problems are taken largely from plans of existing modern plants. The choice of type and size of units for certain conditions are given particular attention.

[COURSE VI]

Electrical Engineering—B-19

PREPARATION: B-11

The elementary principles of Electricity and Magnetism are considered in the lecture course of Physics. Their development and application are

taken up in this course in a detailed study of the means used to generate, transmit, and transform electrical energy to meet the requirements of textile machinery and plants. This involves the theory of Direct and Alternating Current Generators, Motors, Instruments, as well as the various phenomena associated with them.

The laboratory course includes a study of instruments and methods employed in general electrical power testing. Attention is given to various lighting units, their particular properties and relative values in meeting the special problems of illumination in textile mills.

[COURSE VI]

Efficiency Engineering—B-20

In recognition of the great advances which have been recently made towards better methods of management and of the possibilities which may result from its application to the textile industry, a course in efficiency engineering has been established to enable the student to understand and apply the principles and details of modern scientific management. The instruction in this course begins with a consideration of the factory location and design and their effect on efficiency of production, after which the proper form of organization for manufacturing establishments is discussed in detail, together with organization charts and records. This is followed by a study of the details of the work of the various departments, especially the planning department, during which the subjects of time study, planning, routing, special slide rules and instruments, store systems and perpetual inventories, mnemonic symbolizing, orders and returns, graphical reports, etc., are all gone into very carefully.

The course includes a thorough study of the various wage systems in common use and the relations of psychology to efficient management is also considered. Finally, visits to shops where modern methods of management have been installed enables the student to see the practical working out of the ideas developed in the lectures.

Accounting

The purpose of the course in accounting is two fold. In the first place it aims to acquaint the student with the modern methods of handling the financial end of a mercantile and manufacturing business, and at the same time gives him a much-needed knowledge of certain common elementary business transactions, such as, for instance, the use of checks, drafts and notes, bank discounts, etc. In the second place it gives him an intelligent comprehension of the requirements and the design of a proper cost accounting system.

Whereas it is not the purpose of the course to make the student a proficient bookkeeper or accountant, the nature of the work necessitates a knowledge of double-entry bookkeeping and of the functions of ledger accounts, which is developed by lecture and practice work. It is coupled with instruction on the compilation of Balance Sheets in proper form, together with Profit and Loss statements and supporting schedules. Thus

a student is able to see the exact effect of each item of expense or income on the net profits of the business, or on its assets and liabilities, and can better judge of their relative importance. Accounting methods of handling charges incident to a manufacturing business are considered in lectures and elaborated by actual practice.

Cost Accounting forms an important part of this subject and gives a knowledge of the various methods of distributing the proper proportion of wages, overhead expenses, etc., in ascertaining the cost of the finished product.

During the summer preceding this work of the fourth year, the student is required to work up a simple bookkeeping set, thus saving valuable time during the school year and effectively preparing the ground for the instruction work.

Business Law

Under this subject are given lectures, supplemented by the use of suitable texts, on the law governing Contracts, Negotiable Instruments, Sales, Bills of Lading, Real Estate and Corporation.

Patent Law

During the fourth year a course of six lectures is given by a practicing Patent Attorney of Lowell. This course takes up the elements of patent law and is intended to give the student a guiding knowledge of the subject.

[COURSE VI]

Mill Engineering—B-21

PREPARATION: B-3, B-4, B-10, B17

This work taken throughout the third and fourth years covers a wide range of subjects and is of the most practical character possible. All of the student's previous work in engineering and his knowledge of the textile processes are here brought together in the consideration of the larger problems of mill design, construction and organization. A detailed study is made of the most modern types of mill buildings including all calculations and drawings. Practice is also given with the engineer's transit and level in plane surveying, setting batters, linings and leveling shafting.

The modern methods of power transmission and the proper arrangement of textile machinery are also given careful consideration. The problems are in every case taken from actual conditions from mills already built, or in process of construction. The question of mill heating, ventilation, lighting, humidification and fire protection are also studied and the time spent in the drawing-room enables the student to work out nearly all of the more important problems involved in the design of an entire textile mill plant. The close relation existing between proper plant design and economical production is also considered.

[COURSE VI]

CREMISTRY AND DYEING DEPARTMENT—C

Elementary Chemistry (Inorganic and Organic Chemistry)—C-1

Instruction in Elementary Chemistry extends through the first year and includes lectures, recitations, and a large amount of individual laboratory work upon the following subjects:

Chemical Philosophy

Chemical action, chemical combination, combining weights, atomic weights, chemical equations, acids, bases, salts, Avogadro's law, molecular weights, formula, valence, periodic law, etc.

Non-Metallic Elements

Study of their occurrence, properties, preparations, chemical compounds, etc.

Metallic Elements

Study of their occurrence, properties, metallurgy, chemical compounds, etc.

The students take up as thoroughly as the time will permit the qualitative detection of the more common metals and non-metals, with practical work.

The Hydrocarbons and their Derivatives

Study of their occurrence, properties, preparations and uses. This work although elementary in character is of sufficient breadth to prepare the student understandingly for the work with the artificial dyestuffs which follows.

[ALL COURSES]

Qualitative Analysis—C-2

PREPARATION: C-1 TAKEN SIMULTANEOUSLY

Qualitative Analysis is studied during the second term of the first year. The work consists of lectures, recitations, and laboratory work. The student must become familiar with the separations and the detections of the common metals and acids by the analysis of a satisfactory number of solutions, salts, alloys, and pigments. At intervals during the term, short laboratory tests are given as well as the regular written examinations.

No pains are spared to make the course as valuable to the student as possible and to encourage only thorough and intelligent work.

When sufficiently advanced, students take up the examination of various products with which the textile chemist must be familiar, such as testing mordanted cloths, pigments, and the various reagents.

During the latter part of this course a certain amount of time is devoted to the preliminary operations of Quantitative Analysis, such as

the precipitation and washing of such substances as barium sulphate, magnesium ammonium phosphate and calcium oxalate, although no weighings or actual determinations are made.

A student's marks in this subject depend as much upon the neatness and care used in manipulation as upon the actual results obtained.

[COURSE IV]

Stoichiometry—C-3

PREPARATION: B-1

This subject is taken during the second half of the first year and is continued throughout the second year as an adjunct to Quantitative Analysis. The application of the metric system is thoroughly studied and problems are worked involving the expansion and contraction of gases, determination of empirical formulae, combining volume of gases and quantitative analysis.

[COURSE IV]

Advanced Inorganic Chemistry—C-4

PREPARATION: C-1

The whole subject of Inorganic Chemistry is reviewed during the second year, and many advanced topics are introduced which were necessarily omitted from the first year course in General Chemistry.

[COURSE IV]

Advanced Organic Chemistry—C-5

PREPARATION: C-1

In this course which consists of lectures and recitations, the principles of organic substitution and synthesis are thoroughly discussed, and as many illustrations are used as the time will permit, particularly such as are applied in the arts. The aliphatic series of hydrocarbons and their derivatives are studied for about twenty weeks, the remainder of the time being devoted to the benzene series. The aim of the course is to lay a broad foundation for the study of the Chemistry of the artificial dyestuffs. Students are required to work out problems in the synthesis of various compounds in order to become familiarized with equation writing.

[COURSE IV]

Quantitative Analysis—C-6

PREPARATION: C-2, C-3

During the second year, the principles of analytical work are thoroughly taught, the work being based on Talbot's Quantitative Chemical Analysis. Gravimetric analysis is studied during the first term, and volumetric analysis during the second term. The samples analyzed include

salts, ores, minerals, bleaching powder and alkalies. Frequent recitations are held for the discussion of methods and the solution of stoichiometrical problems. Students are encouraged to read the standard works and magazines on chemical subjects, in order to cultivate broad views of the science.

[COURSE IV]

Quantitative Analysis—C-7

PREPARATION: C-6

This course consists chiefly of technical analysis, the principal consideration being the analysis of water, alum, ammonia, soaps, coal, indigo, tannin, and the ultimate analysis of organic compounds, as well as the examination of acids, alkalies, oils, scouring materials and such substances as starches, gums and other thickeners, and the detection of adulterants.

No pains are spared to give the student the benefits of all the latest researches along the lines of industrial analytical methods, and original work is encouraged in all.

[COURSE IV]

Physical Chemistry—C-8

PREPARATION: C-4, C-5, B-11

This subject is studied during the third and fourth years. It includes the principles of calorimetry, specific heat, vapor density, the various methods of determining molecular weights, laws of solutions, electrolytic dissociation, theories of precipitation, thermo-chemistry, surface tension, etc. The student is required to work out a large number of problems introduced by the subject.

[COURSE IV]

Textile Chemistry and Dyeing—C-9

PREPARATION: C-1, B-3, B-7

The outline of the lecture course which is given during the first term of the second year is as follows:

Technology of Vegetable Fibres

Cotton, Linen, Jute, Hemps, China Grass. Chemical and physical properties, chemical composition, microscopical study, and their action with chemicals, acids, alkalies and heat.

Technology of Animal Fibres

Wool, Mohair, Silk. Chemical and physical properties, chemical compositions, microscopical study, and their action with chemicals, acids, alkalies and heat.

Technology of Artificial Fibres

Study of the various forms of artificial silk, the process of manufacture, their properties and action with chemicals, acids and heat.

Operations Preliminary to Dyeing

Bleaching of cotton and linen, wool scouring, bleaching, fulling and felting of wool, carbonizing, silk scouring and bleaching, action of soap.

The bleaching of cotton cloth, yarn and raw stock is studied at length with detailed description of the various forms of kiers and machinery used; also the action of the chemicals used upon the material and the various precautions that must be taken in order to insure successful work.

Under this heading is also included an exhaustive study of the reagents used in emulsive wool scouring process and their action upon the fibre under various conditions; also the most successful of the solvent methods for degreasing wool.

Water and its Application in the Textile Industry

Impurities present, methods for detection, their effect during the different operations of bleaching, scouring, dyeing and printing, and the methods for their removal or correction.

The important subject of boiler waters is also studied under this heading with a full discussion of the formation of boiler scale, its disastrous results and the methods by which it may be prevented.

Mordants and Other Chemical Compounds used in Textile Coloring and Classified as Dyestuffs

Theory of mordants, their chemical properties and the application, aluminum mordants, iron mordants, tin mordants, chromium mordants, organic mordants, tannin materials, soluble oil, fixing agents, levelling agents, assistants, and numerous other compounds, not dyestuffs, that are extensively used in the textile industry.

Under the heading are included the definition of various terms and classes of compounds used by textile colorists, such as color lakes, pigments, fixing agents, developing agents, mordanting assistants, mordanting principles and levelling agents.

Theory of Dyeing

A discussion of the chemical, mechanical, solution and absorption theories, and the various views that have been advanced by different investigators of the chemistry and physics of textile coloring processes.

Under this heading are discussed the general methods of classifying dyestuffs and definitions of such terms as textile coloring, dyeing, textile printing, substantive and adjective dyestuffs, monogenetic and polygenetic dyestuffs.

Natural Organic Coloring Matters

Properties and application of indigo, logwood, catechu or cutch, Brazil wood, cochineal, fustic, tumeric, madder, quercitron bark. Persian berries, osage orange, and other natural dyestuffs that have been used within recent years by textile colorists.

Mineral Coloring Matters

Under this heading are discussed the properties of such inorganic coloring matters and pigments as chrome yellow, orange and green, Prussian blue, manganese brown, and iron buff.

Artificial Coloring Matters

General discussion of their history, nature, source, methods of manufacture, methods of classification, and their application to all fibres.

Special study of:—

Basic Coloring Matters.

Phthalic Anhydride Colors, including the eosins and phloxines.

Acid Dyestuffs.

Janus Colors.

Direct Cotton Colors.

Sulphur Colors.

Mordant colors, including the alizarines and other artificial coloring matters requiring metallic mordants.

Mordant Acid Colors.

Insoluble Azo Colors, developed on the fibre.

Reduction Vat Colors.

Aniline Black and other artificial dyestuffs not coming under the above heads.

As each class of dyestuffs is taken up, the details of the methods of applying them upon all the different classes of fabrics and in all the different forms of dyeing machines are thoroughly discussed; also the difficulties which may arise in their application, and the methods adopted for overcoming them.

Machinery used in Dyeing

A certain amount of time is devoted to the description of the machinery used in the various processes of textile coloring, which is supplemented as far as possible by the use of charts, diagrams, and lantern slides.

Most of the important types of dyeing machines are installed within the dyehouse of the School and the students can be taken directly from the lecture room and shown the machines in actual operation.

[ALL COURSES]

Dyeing Laboratory—C-10

PREPARATION: C-9 TAKEN SIMULTANEOUSLY

Besides lectures and recitations upon the subject of Textile Chemistry and Dyeing, practical laboratory work is required. By the performance of careful and systematic experiments the student learns the nature of the various dyestuffs and mordants, their coloring properties, their action under various circumstances and the conditions under which they give the best results. The more representative dyestuffs of each class are applied to cotton, wool and silk, and each student is obliged to enter in an especially arranged sample book, a specimen of each of his dye trials with

full particulars as to the conditions of experiment, percentage of compounds used, time, temperature of dye bath, etc.

For convenience and economy most of the dye trials are made upon small skeins or swatches of the required materials, but from time to time students are required to dye larger quantities, in the full size dyeing machines which are described elsewhere.

By the use of a small printing machine the principles of calico printing are illustrated, and by means of the full sized dyeing machines and vats, the practical side of the subject is studied. It is the constant endeavor of those in charge, to impart information of a theoretical and scientific character that will be of value in the operation of a dyehouse.

[COURSE IV]

Dyeing Laboratory—C-11

PREPARATION: C-9 TAKEN SIMULTANEOUSLY

This course in general laboratory work in Textile Chemistry and Dyeing is given during the second term of the second year. It is so arranged as to acquaint the student with the properties of the fibres, mordants and coloring matters, and their application in the Textile Industry.

[COURSES I, II, III]

Industrial Chemistry Laboratory—C-12

Special attention has been given to this subject because it is considered extremely important in the study of chemistry in general, and of textile chemistry in particular. During the second year considerable time is spent in the laboratory in the actual manufacture, from raw materials, of the chemical compounds used in textile work. Each student is required to make careful record of all of the crude materials used, as starting points, and to carry the various processes through carefully with the view of producing as great and pure a yield of each substance as possible. Industrial Chemistry not only involves the application of the principles of both inorganic and organic chemistry, but of analytical work as well, for the purity of the compounds produced must be tested after their manufacture.

In addition to the general work in this subject, each student is required to make a special study of the manufacture of some chemical from raw materials in considerable quantity (20 to 25 pounds) making a complete quantitative analysis of all raw materials used and of the finished product, accounting for everything throughout the process with the object of producing as near the theoretical yield as possible. The student is charged with the amount of raw material at market prices.

Recently much new apparatus has been added to the industrial chemistry laboratory, and it is now believed to be one of the most complete of its kind. The present equipment allows a comparatively large quantity of material to be handled at one time.

[COURSE IV]

Industrial Chemistry

Lecture—C-13

PREPARATION: C-4, C-5, C-12

During the whole of the third year, lectures and recitations are held in Industrial Chemistry the course in general following "Thorpe's Outline of Industrial Chemistry." Particular attention is paid to those subjects which are of special interest to the textile chemist, as oils, soaps, gas and coal tar industry, building materials, and the manufacture on a large scale of important chemical compounds, such as the common acids and alkalies, bleaching powder, various mordants, etc. The course is illustrated as far as possible with specimens, diagrams and charts, and the students are given an opportunity to visit some of the industrial establishments in the vicinity of Lowell and Boston.

[COURSE IV]

Advanced Textile Chemistry and Dyeing—C-14

PREPARATION: C-9, C-10

This is a continuation of the Textile Chemistry and Dyeing of the second year and includes a review of the second year's work in this subject, with the introduction of many advanced considerations, and in addition the following subjects:—

Classification and Constitution of Artificial Dyestuffs

A study from a more advanced standpoint of the classification and constitution of artificial dyestuffs, including the various methods used in their production, also the orientation of the various groups which are characteristic of these compounds, and their effect on the tinctorial power of dyestuffs.

The object of this study is to give the student a more complete knowledge of the artificial dyestuffs from the color manufacturer's point of view, which will prove of particular value to those who intend later to enter the employ of dyestuff manufacturers or dealers.

Color Matching and Color Combining

A study of that portion of physics which deals with color, and the many color phenomena of interest to the textile colorist, and lecture work being supplemented with the practical application of the spectroscope and tintometer, and much practice in the matching of dyed samples of textile material.

The primary colors both of the scientist and textile colorist and the results of combining coloring lights and pigments, and such subjects as color perception, color contrast, purity of color, luminosity, hue, color blindness, dichroism, fluorescence, and the effect of different kinds upon dyed fabrics are discussed under this heading.

Each student's eyes are tested for color blindness early in the course in order that he may be given an opportunity to change his course if his eyes should prove defective enough to interfere with his work as a textile colorist.

A dark room has been provided where various experiments in color-work and color matching may be performed.

Dye Testing

This subject includes the testing of several dyestuffs of each class, to all the common color destroying agencies, the determination of their characteristic properties and their action towards the different fibres, also the determination of the actual money value and coloring power of dyestuffs in terms of a known standard.

Each student is required to make a record of each color tested upon an especially prepared card which furnishes a permanent record of all dyestuffs, their dyeing properties, fastness to light and weather, washing, soaping, fulling, perspiration, bleaching, steaming, ironing, rubbing, acids and alkalies.

Union Dyeing

A study of the principles involved in the dyeing of cotton and wool, cotton and silk, and silk and wool union materials with the production of solid and two color effects.

Textile Printing

A thorough study of the whole subject of textile printing, each student being required to individually produce no less than twenty different prints including the following styles:—Pigment style, direct printing style, steam style with tannin mordant, steam style with metallic mordant, madder or dyed style, the ingrain or developed azo style, discharge dye style, discharge mordanted style, resist style, indigo printing, aniline black printing.

The different parts of the calico printing machine are thoroughly studied, also the precautions which must be considered in its use and the arrangement of the dyeing apparatus which must accompany such a machine.

Special attention is paid to the methods of mixing and preparing the various color printing pastes that are used in the above work upon the manufacturing scale as well as experimentally in the laboratory.

Cotton Finishing

A study of the various processes of finishing cotton cloth and the different materials used therein. The work involves the discussion of the various objects of cotton finishing and such operations as pasting, damping, calendering, stretching, stiffening, merceriz-

ing, beetling, and filling, and the various machines used for carrying out these processes.

Mill Visits

During the third and fourth years, visits are made to some of the large dyehouses, bleacheries and printworks in the vicinity.

[COURSE IV]

Organic Chemistry Laboratory—C-15

This course, while including practice in the usual methods of organic analysis and giving excellent training in the principles and manipulations of general organic synthesis, is especially devoted to the synthetic dye-stuffs. The student not only prepares many of the representative dye-stuffs, but what is far more important, he carries out all the operations beginning with coal tar itself. Thus, instead of merely coupling two or more of the foreign imported intermediate products to make a dyestuff, he starts with the basic substances obtained from the coal tar and makes his own intermediate products. As far as is possible the student will be made acquainted with the problems which might arise in a dyestuff factory and an excellent opportunity is presented for original work.

[COURSE IV]

Engineering Chemistry—C-16

PREPARATION: C-4, C-5, C-6

A series of lectures is given upon the general subject of Engineering Chemistry, which include particularly the consideration of fuels, oils, and water from the chemical engineer's standpoint. The elements of Chemical Engineering are also considered to such an extent as time will permit.

[COURSE IV]

Industrial Analysis—C-17

PREPARATION: C-6

In conjunction with the lectures in Engineering Chemistry there is required a specified amount of laboratory work in the Industrial Analysis Laboratory which has been recently thoroughly equipped with the latest and best apparatus for fuel and oil analysis.

[COURSE IV]

Microscopy and Photomicrography—C-18

The value of the microscope in the detection and examination of the various fibres cannot be overestimated, and often facts may be discovered, and conclusions drawn, which could be arrived at in no other way.

The students in this course are given as much work with the microscope as time will permit. They receive instruction in the use of the high grade microscopes, and not only have practice in the examination and detection of the fibres, but are required to become proficient in the preparation of permanent slides.

Opportunity is also given for students to take photomicrographs of fibres and the various slides which they may prepare. A special dark room has been provided for this purpose.

[COURSE IV]

Advanced Dyeing Conference—C-19

During the latter part of his course each student will be required to write, for presentation before the other members of his class, a paper upon some assigned subject of general interest. After presentation the subject will be open to discussion and question.

The object of this conference is two fold. First to give the student experience and practice in systematically looking up an assigned subject, and presenting it before others, and secondly of bringing before the class a greater variety of subjects with more detail than could be covered by the general lectures of the course.

[COURSE IV]

Advanced Organic Chemistry (Dyestuffs)—C-20

This course consists of an advanced study of the coal-tar coloring matters, their chemistry, relations of their composition to their coloring power, and the chemistry of their preparation.

[COURSE IV]

Technical German—C-21

This course consists of the reading of German technical literature with the object of familiarizing the student with the current German publications in Textile Chemistry and Coloring.

[COURSE IV]

Thesis—C-22

Before graduation the student must present a thesis which shall consist of a report of some original investigation or research that he has conducted while at the school.

A relatively large number of hours are specially set aside for this work, and students are encouraged to select some object for their investigation which shall be of practical as well as theoretical interest.

[COURSE IV]

TEXTILE DESIGN AND WEAVING DEPARTMENT—D

Textile Design—D-1

During the first year instruction is given in the subject of classification of fabrics, use of point or design paper, plain fabrics, intersection, twills and their derivation, sateen, basket and rib weaves, checks and stripes, fancy weaves including figured and colored effects; producing chain and draw from design and vice versa; extending and extracting weaves.

[FIRST TERM—ALL COURSES]

[SECOND TERM—COURSES I, II, III, VI]

Decorative Art—D-1

The instruction in this subject is given in connection with Textile Design, and is conducted entirely by class work. During the first term Freehand Drawing is taught by means of plates and models, and practice in coloring is given in conjunction with this work.

Practice in lettering, spacing and general arrangement of designs and sketches is given. The Engineering alphabet is used in all work.

During the second term instruction is given in drawing, sketching, coloring and designing with reference to their application in textiles. Good examples of applied design in textiles as well as in other branches are used as a basis for modified designs selected and composed by the student. This stimulates originality as well as teaches the student to appreciate good designs and color.

Cloth Analysis—D-1

In the first year this subject takes up in a systematic manner, the analysis of samples illustrating the various cloth constructions for the purpose of determining the design of the weave, the amount and kind of yarns used, and forms the basis of calculation in the cost of reproducing any style of goods. The various topics discussed are: reeds, and sets; relation and determination of counts of cotton, woolen, worsted, silk, and yarns made from the great variety of vegetable fibres; grading of yarns, folded, ply, novelty and fancy yarns; application of the metric system to yarn calculation; problems involving take-up, average counts, determination of counts of yarn, weight of yarn required to produce a given fabric.

[FIRST YEAR—ALL COURSES]

Hand Loom Weaving—D-1

During the first year the work in hand loom weaving is taken in connection with design and analysis and consists largely of picking-out patterns and reproducing them in the loom. Instruction is also given in hand dressing, combing, beaming, drawing-in and building harness chains for doing dobby work.

[FIRST TERM—ALL COURSES]

[SECOND TERM—COURSES I, II, III]

Textile Design—D-2

FOR COTTON GOODS--PREPARATION : D-1

The work of the second year follows with consideration of fancy and reverse twills, diaper work, damasks, skip weaves, sateen fabrics with plain ground, backed fabrics, and multiple ply fabrics. Students are required to make original designs and put the same into the loom. Special attention is given to the consideration of color effects.

The analysis of these fabrics forms a part of the course in design. This also includes the necessary calculations required to reproduce the fabric or to construct fabrics of similar character.

[COURSES I, III, VI]

Textile Design—D-3

FOR WOOLEN AND WORSTED GOODS

PREPARATION : D-1

During the second year the instruction given includes warp and filling backed cloth, figured effects produced by extra warp and filling, double cloths, multiple ply fabrics, cotton warps, blankets, bath-robcs, crepes, filling reversible, Bedford cords, imitation furs, crepons, matelasse and imitations, double plain, ingrains, velvets, corduroys, overcoatings, trouserings.

The analysis of these fabrics together with the consideration of the shrinkages, and dead loss in all fabrics, theory of diameter of yarns, costs of mixer blends, is a part of this course.

[COURSES II, III, VI]

Decorative Art—D-4

PREPARATION : D-1

The work of the second year is similar to that of the previous year, but is more advanced and specific. Original work is required as well as copying and composition work.

[COURSE III]

Textile Design—D-6

PREPARATION : D-2 OR D-3

The advanced work takes up the more complicated weaves adapted to harness work and leads into leno and Jacquard designs. The following is a brief list of the subject heads which will give some idea of the course: Double plain cloths, ingrains, tricots, chinchilla, tapestry, blankets, upholstery, spot weaves, pile or plush, crepon, matelasse and its imitation, pique, Marseilles, quilting, miscellaneous designs for Jacquard, leno, fustian, tissue fabrics and lappets.

The same plan is pursued during this year as in the second year; that of requiring the student to make original designs and to weave the same.

[COURSES I, II, III, VI]

Cloth Construction—D-7

PREPARATION : D-2 OR D-3

The work includes the application of the different weaves and their combinations in the productions of fancy designs, both modified and original, the calculation involved in the reproduction of standard fabrics changed to meet varying conditions of weight, stock, counts of yarn and value, and the discussion of the breaking strength of fabrics and relationship of the construction of the fabric to breaking strength.

Instruction in this subject which is given by class room work, is intended to bring together the principles considered under the subject of design, cloth construction, weaving and yarn making of previous years, and to show the bearing each has in the successful construction of a fabric.

[COURSES I, II, III, VI]

Decorative Art—D-8

PREPARATION : D-4

Original designs and sketches for particular grades of goods and the study of color effects form the important part of the third year course. It should be understood that work in Decorative Art is carried on in conjunction with textile construction and weaving, particularly on the Jacquard loom. Designs of merit are carefully developed in detail and woven into cloth.

[COURSE III]

Decorative Art for Special Students

This course is planned to give a student a working knowledge and appreciation of design. The first and second years are devoted to a general study of design, color, perspective, lettering and rendering. Drawings are made in the Historic styles for all materials—wood, gold, silver, copper, brass, leather, fabrics, wall papers, and glass.

In the third year students should specialize and devote their attention to the material in which they expect to work.

Power Weaving—D-9

PREPARATION : D-1. TAKEN SIMULTANEOUSLY WITH B-5

In connection with the work in Textile Design and Cloth Analysis, practical work is carried on upon the power looms. This includes the preparation of warps, beaming, dressing, sizing, drawing-in and making of chains, the cutting and lacing of cards, spooling and quilling and the machinery for the same. A study is made of warpers and sizing machines both for cotton and woolen. Lectures are given to correspond with the progress of the student in the Power Weaving Laboratory covering the following subjects:

Loom adjustments, chain building, shuttle changing looms, dobbie looms, single and double acting dobbies, handkerchief motions, leno weaving, centre selvedge motions, filling changing looms, oscillating reeds, lappet motions, various shaker motions, towel and other pile cloth weaving. Jacquard looms, single and double lift leno Jacquards, Jacquards of special design, tying up Jacquard harness. The consideration of the mechanical operation and design of the special mechanisms and the calculations involved are taken up by the Engineering Department in the course of Weaving Mechanism.

[COURSE I, II, III, VI]

Power Weaving—D-10

PREPARATION: D-9, D-2 or D-3

Instruction is given in weaving on fancy woolen and worsted looms, single and double acting dobbies, leno weaving, various shaker motions, lappet loom weaving, double and single lift Jacquard looms, tying up Jacquard harness, leno Jacquard, harness and box chain building; warp preparation for woolen and worsted and cotton; formulas for making up different kinds of sizing. Lectures are given to correspond with the same.

[COURSES I, II, III, VI]

LANGUAGE AND HISTORY DEPARTMENT—E

English—E-1

PREPARATION: A-5

A technically trained man should be able to express himself clearly, forcibly and fluently, as inability to do so will be a serious handicap to him in after life. The object of the course is to develop the student's power of expression by a thorough study of the principles of advanced rhetoric and composition and by constant writing of themes illustrative of the four forms of discourse, viz., description, narration, exposition, and argumentation. In addition to the study of rhetoric and composition and the writing of themes, several classics such as are not read in the preparatory schools are studied and discussed.

[ALL COURSES]

Elementary German—E-2

This course is intended for first year students who offer French as an entrance requirement. The work is elementary in character, and much time is devoted to the study of the rudiments of German grammar with practice in composition. During the latter part of the year considerable attention is given to the reading of ordinary German prose, which serves as an additional preparation to the student for the later reading of works along scientific and industrial lines.

Advanced German—E-3

PREPARATION: E-2

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year. The work consists of the study of some of the more advanced principles of grammar and especially of the reading of scientific German dealing with a variety of subjects, and the translation of commercial German.

[COURSES IV, VI]

Elementary French—E-4

This course is intended for first year students who offer German as an entrance requirement. The work is elementary in character, and much time is devoted to the study of grammar and composition. Facility in translation is acquired by a considerable amount of reading from general or scientific sources.

Advanced French—E-5

PREPARATION: E-4

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year, and the work is devoted almost entirely to the translation of scientific French.

[COURSE VI]

Industrial History—E-6

PREPARATION: A-6

The economic history of a nation is not less interesting or dramatic than its political history, while it is absolutely essential to a thorough understanding of modern business conditions. The object of this course, which is intended for second year students, is to trace the development of the three leading industrial nations of the world, viz., the United States, England, and Germany, from simple, isolated agricultural communities to the complex industrial and commercial society of today. The course consists of weekly lectures supplemented by text-book reading. Among the topics treated are: natural resources; colonization, territorial expansion; manufactures; agriculture; finance; commerce; transportation; revenue tariffs; monopolies; governmental regulation; organization of labor; industrial legislation; immigration, conservation; contemporary problems. During the year each student will be required to write two or more theses on subjects connected with industrial history in order that he may have practice in research work and also may continue his training in English.

[ALL COURSES]

Economics—E-7

PREPARATION: E-1, E-6

This course consists of lectures supplemented by recitations based upon both the lectures and a text book. The character of the course is

descriptive rather than theoretical, and the aim is to acquaint the student with the accepted principles of economics and some of their applications to industrial conditions.

Among the topics discussed are: the nature and scope of economics; the evolution of economic society; the three factors of production, land, labor and capital; the four elements in distribution, rent, wages, interest, and profits; business organization; value and price; monopoly; money, credit, and banking; international trade; protection and free trade; transportation; insurance; economic activities of municipalities; and public finance. In short, the course deals with the fundamental principles that underlie a wide range of activities.

[COURSES IV, VI]

COTTON DEPARTMENT—F

Cotton Yarn Manufacturing—F-1

PREPARATION: B-1, B-3, B-7

Instruction is given by means of lecture and laboratory work. The outline of the course is as follows:

Fibre

Before taking up the details of the operation of manipulating the fibre into yarn a careful study is made of the characteristics and classification, both botanically and commercially, of the many varieties of the cotton fibre. Methods employed in cultivating, marketing, grading, and stapling are considered, and under these heads a detailed study is made of the types of gin employed.

Opening and Picking

Instruction in the preliminary operation of opening and picking covers the mechanical construction of the machines, their parts and adjustments, as fully as the manufacturing results accomplished by the machines. This includes such construction details as Evener, Lap Measuring and Safety Stop Motion, Grids, Cleaning Trunks, Beaters, etc., also operating details which involve the adjustment of waste, drafts and character of laps.

Carding

The process of carding is considered one of the most important, and proper time is devoted to the construction and operation of cards that the students may be familiar with the various parts of the card and the function and design of each. The construction and application of card clothing, as well as the methods of grinding, forms a part of the work. The influence of faulty parts, defective condition and their remedy are included.

Drawing

Under this head is taken up the theory of doublings and their effect upon the quality of roving and yarn. Like previous and subsequent processes the machine construction forms an important part of the work. Proper stress is paid to such subjects as stop motions, drawing rolls and their covering, cleaners and evener motions.

Roving Processes

Under this head is studied the various machines known as the Slubber, Intermediate, Fine and Jack Fly Frames. The relative motion of the various parts of these machines are so complex that a good opportunity is here presented to fix in the student's mind the application of certain mechanical principles that have use in other departments and upon other machines in the manufacture of textile material. With each process of yarn manufacture is explained the systems of sizing and numbering and under this head is taken up both the Metric and English systems.

Ring Spinning and Twisting

The consideration of spinning yarn by the ring frame method involves a knowledge of the uses to which the yarn is to be put, subsequent methods of handling that proper roving may be selected, suitable amounts of draft and twist provided, correct size of rings and travellers selected, building motions suitably adjusted, etc. The operation of twisting yarns is so closely related to spinning by the ring method that it is studied at the same time. This opens an almost limitless field of novelty yarn manufacture and offers a very good opportunity to derive new types of yarn or new mechanism to produce the effects. Yarn defects are studied with reference to the cause and remedy.

Mule Spinning

This method of spinning is very different from that of the ring frame and the mechanical details are more complicated. The student is furnished with new means of producing yarns and can compare the relative advantage of each method. A thorough understanding of mule spinning is perhaps more a study of mechanical motions and their functions. This results almost invariably in assisting the student to understand previous processes and machines better because of his work on the mule. It is the object to make clear to the student's mind the principles underlying the construction and operation of the parts that control the Drawing, Twisting, Backing Off, Winding, together with special motions and devices as are used upon the modern mule.

Combing

This process is explained by lecture work and by operation and assembling of the various types of combs in service in the laboratory. The object of combing is fully considered and the different means employed on the many types of combers on the market is studied. This includes such types as the Heilman, New Whittin and Nasmith Combers.

Organization

Following the detailed study of the individual processes it is necessary to consider the relation of each to the other, the programs, balance of production, cost of machinery for various counts, quantities and styles of yarns. Under this heading is also studied such subjects as depreciation of machinery, cost systems, economics, arrangement of machinery, power demands, etc.

[COURSES I, III, VI]

WOOLEN AND WORSTED YARNS—G

Manufacturing—G-1

PREPARATIONS B-1, B-3, B-7

Raw Materials

A study of raw materials which enter into the manufacture of woollens or worsted yarns or are made into yarns by processes similar to those employed in the manufacture of woollen and worsted yarns, would include Silk, Mohair, Alpaca, Vicuna, Cashmere, Camel's Hair, Cotton, Flax, Hemp, Jute and Ramie. In connection with these are considered Shoddy, Noils, Mungo and Extracts.

Wool Sorting

Familiarity with the various grades and kinds of wool is obtained by lecture and by actual sorting of fleece wool under the direction of an experienced wool sorter. The various characteristics and properties are explained, as are also trade terms such as Picklock XXX, XX, $\frac{1}{2}$ -Blood, $\frac{3}{8}$ -Blood, $\frac{1}{4}$ -Blood, Delaine, Braid, etc. Some skill is required in the estimation of shrinkage and in judging the spinning qualities.

Wool Scouring

The object of scouring and the methods employed are explained and this involves the consideration of the soaps and chemicals used in washing, also the waste products and their utilization. Actual work is done in scouring a commercial quantity of wool by machines that are made similar in operation to regular commercial machines. A study is made of the effect of the hardness of water upon soap, also tests are made to show this effect. At the same time the use of driers, their operation and regulation is taken up, and the methods of carbonizing wool, noils, burr waste, rags, etc., are studied and practiced.

Burr Picking, Mixing and Oiling

In these processes, preliminary to carding, the students have an opportunity of mixing various colors of wools to produce different effects, and the influence of varying percentages of a given color in a mixture can be seen. Each student is required to make at least twenty sample mixes combining different colors and grades of stock, and to felt and mount the same. Under the subject of oils and emulsions are taken up the characteristics of various oils and the means employed to test these. The use of Mixing and Burr Pickers is made clear.

Carding

The different systems of carding wool, depending upon whether it is to be made into woollen or worsted yarn, are fully explained, as is also the construction, setting and operation of the cards. A part of the work is the reclothing and grinding of the cylinders, strippers, workers, etc. The carding of suitable and commercial quantities of wool and the further manufacture of it into yarn serves to fix the principles of carding in the mind of the student, as well as gives him some skill in handling machinery. At the completion of this part of the work he is required to

prepare and hand in a full description of the process of carding including working drawings, sketches, etc., to fully explain the machines and the methods.

Woolen Mule

The student studies thoroughly the operation of the mule as a whole, and acquaints himself with the various principal mechanisms, as for example, the Backing Off and Winding Motions, the Quadrant, Builder-rail, Faller Regulation, etc. He is required to run the mule and later hand in a thesis describing in full the machine, its parts and their operation.

Top Making and Combing

This branch takes up, besides the carding of the wool on a worsted card, the preparing processes, also gilling of the stock before and after combing. The construction of the gill boxes and combs is studied by lectures and by dismantling and assembling these machines in the laboratories. Later quantities of stock are made into top and then into yarn.

The Noble and Lister combs are studied and the various calculations to determine draft, noiling, productions, etc., are made.

Drawing and Spinning

The equipment in the laboratory offers opportunity to make worsted yarn by either the Bradford or Open Drawing System or by the French System. The process includes the various machines in the successive steps of making Bradford spun yarn and the functions of the different machines are studied. In the latter or French System the stock is run through the drawing machines and the roving spun into yarn on the French Mule. The same method of studying the mechanism and operations of these machines is followed as in the case of previous methods of instruction. The student by pursuing this course can compare the different methods of yarn manufacture and note the results of each.

With the instruction on the Bradford System is given work on the twistors and the effects that may be produced.

Organization

At the end of the course the lay-out of a properly balanced yarn mill is studied and at the same time the cost of the machinery, depreciation, labor costs and machinery arrangements.

[COURSES II, III, VI]

Textile Testing—G-2

The object of this course is to familiarize the student with present-day methods of determining the physical properties of textile fibres, yarns and fabrics. The application of physical laws and methods of measurements, as studied in the course of Physics, are used in the study of physical characteristics of textile material. The work is given to students in advanced courses and consists of lecture and laboratory work. Reports are prepared from each experiment giving the object of the experiment, method of procedure, observation and conclusions, in order that the student may acquire practice and understand the interpretation of data. A special

testing laboratory has recently been constructed and a considerable number of the best standard fibre, yarn and fabric testing instruments of German make have been imported. The laboratory is equipped with means of making and keeping the humidity constant so that tests can be made under uniform or standard conditions of humidity and temperature.

[ALL COURSES]

FINISHING DEPARTMENT—H

Woolen and Worsted Finishing—H-1

PREPARATION: B-3, C-1, D-1, D-9

The outline of this course which is given by means of lecture and laboratory work is as follows:

Burling and Mending

Under this head is taken up for consideration the examination of flannel as it comes from the loom, the construction, use, and location of the perch, the methods used in marking defects, measuring, weighing, and numbering of cloths, also the methods of inspection for fancies, single cloths, and double cloths. The object of burling, mending, and the types of tables employed, the method of removing knots, runners, etc., the object of back shearing and the use of burling irons, the replacing of missing threads and the importance of sewing as a part of the finishing process, are all considered in detail. The removal of oil and tar spots as well as stains of various kinds is studied.

Fulling

This branch covers a study of the conditions of the flannel as it comes from the loom, the influence of oil, etc. upon the procedure. Considerable time is devoted to the various methods of producing a felt, the early types of stocks, hammer falling and crank stocks, and their modifications and development into the present type of rotary fulling mills of both the single and double variety. The details of construction in all machines are carefully taken up and include the design and composition of the main rolls, methods of covering, regulation and means of adjusting the pressure of traps and rolls, consideration of the shoes, the use and regulation of the various types of stop motions, the different types of stretchers, guide rolls, and throat plates.

The theory of felt is taken up and the influence of pressure, moisture, heat, alkali, and acid is considered as well as the hygroscopic and felting properties of different wool fibres. The preparation of the flannel for the mill and the usual methods of determining shrinkages as well as the various methods of soaping are given careful attention. The preparation of various fulling soaps and the value of each for the production of various degrees of felt as well as the determination of the proper amount of alkali for various goods are carefully studied and demonstrated. The manipulation of the various kinds of goods in the mill, viz.: all wool, shoddies, and mixed goods, is studied in class room and by operation in the mill.

The change in weight and strength for each operation is carefully considered, as is also the value of the flocks made in each. A study of the various methods of flocking, such as dry and wet, are considered in both class and machine rooms. In each operation the defects likely to materialize are studied as well as the cause thereof, and various methods of modifying or lessening them.

Washing and Speck Dyeing

This branch considers the scouring, rinsing and washing of goods both before and after the fulling process; the various types of washers and the details of construction, such as suds box, rolls, etc. The theory of scouring, uses of Fuller's earth, salt solutions, and sours, on the different kinds of goods is made clear by practical work in the machine room, where the effects due to improper scouring, such as stains, cloudy effects, wrinkles and unclean goods, are demonstrated. The discussion of the necessity of speck dyeing follows naturally from the study of these matters and includes methods of preparation, materials used, application and tests required.

Carbonizing

This is an important branch of finishing and includes a study of the various carbonizing agents, methods of application, strength of solutions, and neutralizing, as well as the machines used. Stains and imperfections resulting from carbonizing are also considered. The drying and tentering machines and extractors employed are taken up at this point.

Gigging, Napping and Steaming

The construction in detail of the various types of gigs, nappers, steamers, wet gigs, rolling, stretching, crabbing and singeing machines, is discussed and their actions upon the cloth and the results obtained are explained.

Various methods of obtaining lustre and the production of permanent finishes are considered in connection with steaming and sponging.

Brushing, Shearing and Pressing

This includes as do the other branches a careful treatment of the machine employed, the preparation of the cloth for each process, the action of each machine in producing its part of the resultant effect. In manipulation of the shear consideration is given to its setting, grinding, and adjustment. With the brushing machine the effect of steaming and moisture upon the lustre and feel of the goods is shown. A study of the action of the presses, both plate and rotary, involves consideration of pressure, steaming, etc. Special processes to obtain particular effects are taken up and the part played by each machine is explained. The details involved in handling cloth on a commercial scale, as for example, measuring, weighing, ticketing, numbering and rolling, are also explained. The necessary calculation and the methods of finishing all grades of goods are considered from time to time during the year.

[COURSES II, III, IV, VI]

Cotton Finishing—H-2

PREPARATION: B-3, C-1, D-1, D-9

The outline of the course in the Finishing of Cotton Fabrics is as follows:

Cloth Room

Inspection of the various goods and the object thereof. Construction of the various types of inspecting and trimming machines.

Shearing

The object. A consideration of the various types of shears for treating one or both sides at the same time, also the use of the usual cleaning devices, such as emery, sand, and card rolls, beaters and brushes. Grinding and the adjustment of the various parts.

The use of brushing and cleaning machines, rolling devices and calender attachments for grey goods.

Singeing

Development and object of singeing. The construction of singers of all types, and for various purposes. The use of cooling tanks, steaming-devices, rolling and brushing attachments.

Regulation of the flame for various goods and adjustment of the parts. Gas and air pressure, water cooled rolls. The effect of moisture on the cost of singeing. The use of dry cans in connection with singeing. Electric singeing.

Washing

Open width and string washers. Their construction and operation. Soaps, temperature, squeeze rolls. Washing of various goods and the object thereof. Stains.

Napping

The object of napping and the usual method of treating goods. Various types of nappers—Single, Double Acting and Felting nappers. Construction, grinding, and adjustment of various types.

Water Mangles

Their object and the construction of various types. Various rolls, brass, husk, etc. Scutchers; their object and construction.

Starch Mangles

The object and construction of all types of starch mangles for pure starch and filled goods. Various types of rolls, brass, rubber, wood. Action of doctor blades, etc. Regulation and object of pressure.

Methods of starching and finishing all standard goods, also a consideration of the various substances used, such as starch, softener, and fillers. The preparation of starch and various methods of application.

Dryers and Stretchers

Both horizontal and vertical, tenter frames, clips. The swing motion and the finishes thus produced. Construction. Spraying machines, belt stretchers, button breakers. Their object and construction.

Calenders

The object and construction of all types, including the regulation of pressure and nips for the production of various finishes. Various types of rolls and their uses, steel, cotton, husk, and paper. The use of hot and cold rolls. Chasing, friction, embossing and Schriners calenders and the various finishes produced by each. Production of watered effects. Beetling machines.

Making up room—yarding, inspecting. Different types of folds. Pressing, papering, marking.

[COURSES I, VI]

PHYSICAL CULTURE—I-1

This subject is required of all students registered for first year work. The course consists of general athletic exercises with small squads on the campus during the pleasant weather of the fall and spring, and exercise in the school gymnasium during the winter months. The instruction is given by the director of physical culture. Previous to the commencement of the work in the fall, each member of the class is required to submit to a thorough physical examination, a careful record of which is kept. Again at the end of the year another examination is held that progress may be noted.

The student's record depends both upon his regularity of attendance and upon the character of his work. A student who is not regular in attendance or who does not make sufficient progress in the work will be required to repeat the subject during the second year.

[ALL COURSES]

Evening Classes

ENTRANCE REQUIREMENTS AND FEES

All applicants to the evening classes must understand the English language and simple Arithmetic. Those who are graduates of a Grammar School are admitted upon certificate. A blank form for this will be found in the back of the catalogue. Those who cannot present such a certificate are required to take examinations in the subjects of English and Arithmetic. In the examination in English a short composition must be written on a given theme, and a certain amount must be written from dictation. In the examination in Arithmetic the applicant must show suitable proficiency in addition, subtraction, multiplication, division, common and decimal fractions, percentage, ratio and proportion. Opportunity to register or to take these examinations is offered each year, generally on the Thursday evenings of the three weeks previous to the opening of the evening school.

The tuition rate for all students who are non-residents of Lowell is \$10.00 per course per year. Students attending courses requiring more than two nights per week are required to pay \$15.00 per year for three nights and \$20.00 for four nights.

All students whether from Lowell or elsewhere taking courses in the Chemistry and Dyeing Department must before entering the laboratory make a deposit as follows:

Course IVa	\$ 5.00 per year
Course IVb, IVc or IVd	\$10.00 per year

This is to cover the cost of laboratory breakage, supplies, apparatus and chemicals, and at the end of the year any unexpended balance is returned or an extra charge made for excess breakage.

The evening classes usually commence in the month of October and continue for twenty weeks. The school is open on four evenings each week during the period mentioned except when the school is closed for holiday recesses. The schedule showing the arrangements of classes for each term will be announced at the beginning of the school year.

Before entering class all students must fill out an attendance card which can be obtained at the office or from the instructors in the various departments. Any student who has filed an attendance card and who wishes to change his course, should notify the office to that effect.

COURSES

The evening classes offer to those who are employed during the day, instruction pertaining to their daily work or instruction in such branches as are related to the particular department in which they are engaged. Thus, one who is a weaver can carry on a course in Spinning or Designing. A dyer or an employee in a dye house can by means of a course in Chemistry and Dyeing acquire a better and more accurate knowledge of the chemicals and materials he is handling during the day. A machinist working on a lathe, planer, milling machine or at a bench, may add to his accomplishments, a knowledge of drafting, mechanism, and other subjects. This means that any man, young or old, who has the fundamentals of common school education, and who has the determination to advance, may secure in proper sequence the stepping stones to the place toward which he is looking, and rise to even the highest positions in the industry.

The courses of the evening school are varied and arranged to meet the special needs of those engaged in the industry. They vary in length from one year to three and at the completion of each course, the certificate of the school is awarded, providing, however, that the student has been in attendance in the course during the year for which the certificate is granted.

No certificate will be awarded until all dues to the school have been discharged.

1. Cotton Spinning—2 Years

In this course the cotton is taken as it is raised in various parts of the world, and instruction is given in the various processes on all the machines from the gin to the spinning frame and mule. For one who desires only a study of combing, carding or spinning, it is possible to take that part of the course in which he is particularly interested, although it is believed to be better for

a spinner to know something about the machines and processes that precede his own. If one, all his life, has worked with one grade of cotton, an understanding of the other types and grades of cotton, of their properties, methods of cultivation, localities where grown, and uses to which they are adapted, cannot but help to broaden his intellect and make him a more valuable man.

A detailed study of the machines including speeds, drafts, and settings explains and makes clear to the student the arbitrary orders of the mill overseer. There is not time in the mill for explanations as to why a certain change gear is used or how the draft constant is determined. The relative advantages of the many types of mechanisms are considered.

IIa. Woolen Spinning—2 Years

IIb. Worsted Spinning—3 Years

In both courses the students of the first year pursue the same class work covering instruction in the many kinds of wool, the varying properties of the fibres, trade terms, sorting, scouring, carbonizing, etc. This work is followed by instruction in carding and mule spinning for the woolen students. For those desiring to study worsted yarn manufacture work is taken up on the worsted card, followed by gilling and combing and processes of top making. The last year of this course is devoted to a study of worsted yarn manufacture on both the English and French systems.

Thus in three years' time one may acquire a thorough course of instruction in worsted yarn manufacturing, or in two years, a knowledge of woolen yarn manufacture. He is thus able to obtain knowledge of machines and processes that could not be obtained in the ordinary course of events in the mill.

IIIa. Textile Design—3 Years

For one who is working in the design, pattern or weave room, the course in design offers instruction in the great variety of weaves, in cloth construction and analysis. It is practically impossible under ordinary circumstances for one to acquire in

the mill a knowledge of the construction of the many textile fabrics. Where a person spends the greater portion of his life in one or two mills, his knowledge of fabrics is confined to those made in the mills in which he works. A course in designing supplements the experience received during the day, thus broadening a person's textile knowledge as well as making him better acquainted with the fabrics upon which he works daily.

IIIb. Freehand Drawing—3 Years

In the course in Freehand Drawing, instruction is given in the drawing from models, casts and designs. Work is taken up in charcoal and also in colors. This course has appealed to many young women of this city and it is believed that this is a most fortunate opportunity for both young women and young men of Lowell to acquire the elements of artistic designing.

IVa. Elementary Chemistry—2 years

General Chemistry including Inorganic and Organic.
Qualitative Analysis.

IVb. Textile Chemistry and Dyeing—3 years

Lectures in Textile Chemistry and Dyeing.
Laboratory Work in Dyeing.

IVc. Analytical Chemistry—3 years

Laboratory Work and Lectures in Quantitative
Analysis.

IVd. Textile and Analytical Chemistry—4 years

Lectures in Textile Chemistry and Dyeing.
Laboratory Work in Analytical Chemistry.

Hardly any branch of applied science plays so important a part in our industrial world as Chemistry. Many large mills employ the chemist as well as the dyer, and with the great progress which is being made in the manufacture and application of dyestuffs, a basic knowledge of chemistry becomes an absolute necessity to the dyer. Within a comparatively short distance from Lowell are establishments employing men who require some

knowledge of chemistry but who may not necessarily use dyes. Some find a knowledge of analytical chemistry helpful in their everyday work.

To meet these varying needs of our industrial community, the school offers a two year course in General Chemistry, Organic and Inorganic, which may be followed by any one of three courses, viz., Textile Chemistry and Dyeing, Analytical Chemistry and Textile and Analytical Chemistry. In order to take Courses IVb, IVc or IVd, candidates must have a certificate from Course IVa, or show by examination or approved credentials that they have taken the equivalent of the work covered by this course.

Va. Cotton Weaving—1 year

Vb. Woolen and Worsted Weaving—1 year

Vc. Dobby and Jacquard Weaving—1 year

These are called weaving courses, but in reality they might more properly be called courses in loom fixing for particular attention is given to the mechanism of the looms, the timing of the various parts and the adjustments possible to produce desired results. Here again, is an opportunity for students to fix, dismantle, erect and adjust looms in a way that could not be tolerated in any mill. Frequently students come to the classes with the knowledge that certain adjustments must be made upon a loom if certain results are to be obtained, but the reason for these is not known. The school offers the machine, time and instructor in order that the weaver, or loomfixer, may determine for himself the reason for some rule which he practices in his daily work. Not only can he become more familiar with the loom upon which he works every day, but he can study the operations of many other makes of looms.

VIa. Elements of Engineering—3 years

VIb. Mechanical Drawing—3 years

VIc. Machine Shop Practice—3 years

These courses have been arranged with the object of offering to those engaged in the mechanical and electrical departments

of our mills, opportunities to learn something concerning the theory underlying the many practical methods which they pursue during the day.

Under the head of Elements of Engineering is given instruction in Mechanics and Mechanism of machines for one year, followed by a year's course on steam boilers and engines with the auxiliary apparatus found in a modern steam plant. In the third year a brief course in Applied Electricity takes up, as far as time will permit, instruction in alternating and direct current generators, motors and apparatus.

For one having occasion to make a sketch or detail drawing for the purpose of illustration or instruction, or for one who is daily required to work from a drawing or blue print, the course in Mechanical Drawing is offered. It first lays a foundation of the principles of mechanical drawing and follows this with two years' work in drawing directly from parts of machines, preparing both the detail and the assembly drawing.

The Machine Shop Course is almost self-explanatory. The school has one of the best equipped shops for instruction purposes in this vicinity. Nearly all of the standard machine tools are represented, and it is possible to do almost any kind of machine tool work which comes within the range of the tools.

Thus it becomes possible for one who may be working at the bench during the day to learn how to operate a lathe or other tool, or for a lathe hand to acquire a knowledge of a planer, shaper, milling machine, grinder, etc. A man who has a knowledge only of the special machine which he operates may by means of this course, become a more intelligent machinist. He should supplement this course with the courses in Mechanical Drawing and Mechanism in order that his training for an all-round machinist or mechanic may be more complete.

VIIa. Cotton Finishing—1 year

VIIb. Woolen and Worsted Finishing—1 year

In these courses machine work is supplemented by lectures and discussions pertaining to the many finishes given to fabrics. The action of soaps, water, steam, heat and cold upon cloths containing a single type of fibre or made up of many is carefully studied. This course also helps the finisher to broaden his knowledge of textile fabrics.

OFFICERS OF ADMINISTRATION AND INSTRUCTION

Principal

CHARLES H. EAMES, S. B., Massachusetts Institute of Technology, 1897. Active member of The American Society of Electrical Engineers. Experience: Secretary of the Lowell Textile School and instructor in electrical engineering and mathematics; superintendent, Light, Heat and Power Corporation, Lowell, and engineer with Stone and Webster, electrical engineers, Boston, Mass.

Instructors

TEXTILE ENGINEERING

GEORGE H. PERKINS, S. B., chief instructor. Massachusetts Institute of Technology, 1899. Member American Society of Mechanical Engineers. Consulting Engineer for Lowell Bleachery. Experience: Draftsman, Ludlow Manufacturing Company, Ludlow, Mass.; Lockwood Greene and Co., Boston, Mass.

HERBERT J. BALL, S. B., B. C. S., instructor in mechanical and efficiency engineering. Massachusetts Institute of Technology, 1906; Northeastern College, 1916. Experience: Draftsman, Watertown Arsenal; Lincoln-Williams Twist Drill Co.

ULYSSES J. LUPIN, S. B., instructor in mathematics, physics and electrical engineering. Lawrence Scientific School, 1906. Experience: Draftsman, General Electric Company, Lynn, Mass.; with Winston Company, Metropolitan Water Board.

EDWARD K. HULL, instructor in mechanical drawing. Experience: Assistant Instructor in Mechanical Drawing at Tufts College; Instructor in Mechanical Drawing at University of Maine; Draftsman for Boston & Maine Railroad, Boston, Mass.

CHARLES H. JACK, instructor in machine shop practice. Lowell Textile School. Experience: Amoskeag Manufacturing Company, Manchester, N. H.

HENRY K. GREY, evening instructor in machine shop practice. Wentworth Institute. Experience: Saco-Lowell Shops, Lowell, Mass.

CHEMISTRY AND DYEING

LOUIS A. OLNEY, S. B., M. S., chief instructor. Lehigh University, 1896. Member American Institute of Chemical Engineers. Experience: instructor, Brown University; dyeing and finishing department, Stirling Mills, Lowell, Mass.

- HOWARD D. SMITH, PH. D., instructor in chemistry. Tufts College, 1906; Brown University, 1904; Rhode Island College, 1901. Experience: assistant instructor Brown University and Tufts College; instructor Beloit College, Wisconsin.
- RUSSELL B. STODDARD, A. B., instructor in chemistry. Clark College, 1912.
- ROBERT R. SLEEPER, instructor in dyeing. Lowell Textile School, 1900. Experience: Read, Holiday and Sons, Limited, New York City; H. A. Metz and Co., New York City; Hamilton Print Works, Lowell, Mass.; Merrimack Manufacturing Company, Lowell, Mass.
- ARTHUR K. JOHNSON, B. S., instructor in chemistry. Lowell Textile School, 1913. Massachusetts Institute of Technology, 1917.
- ELMER E. FICKETT, B. S., instructor in chemistry. Tufts College, 1908. Experience: Assistant Chemist, Walworth Mfg. Co., Boston, Mass.; Superintendent Assayer, U. S. Nickel Co.; Instructor in School of Mines, University of North Dakota; Instructor in Washington University, St. Louis, Mo.

TEXTILE DESIGN AND WEAVING

- HERMANN H. BACHMANN, chief instructor. Gera Textile School, Germany. Experience: Gustav Weise Public Designing House for the City of Gera; Parkhill Manufacturing Company, Fitchburg, Mass.; Lorraine Manufacturing Company, and Smith Webbing Company, Pawtucket, R. I.
- STEWART MACKAY, instructor in textile design and cloth analysis. Lowell Textile School, 1906. Experience: Bay State Mills, Lowell, Mass.; George C. Moore Wool Scouring Mills, North Chelmsford, Mass.
- ANDREW YOUNGER, instructor in Design and Weaving Department, Lowell Textile School, Evening Class, 1913. Experience: Merrimack Woolen Mills, Lowell, Mass.; Clinton Worsted Co., Clinton, Mass.; Nashua Valley Mill, Ashaway, R. I.; Merchants Woolen Co., Dedham, Mass.; C. A. Root Mfg. Co., Uxbridge, Mass.
- MARTIN HOELLRICH, instructor in power weaving. Lowell Textile School, Evening Class, 1910. Textile School, Reichenbach, Germany. Experience: C. F. Weiss, Helmbrechts, Germany; J. Back, Turkish Shawls, Reichenbach, Germany; Parkhill Mfg. Co., Fitchburg, Mass.; American Woolen Co., Lawrence and Winooski; Pacific Mills, Lawrence.
- E. ELIZABETH WHITNEY, evening instructor in freehand drawing. Normal Art School, Boston, 1882. Pupil of Dr. Denman W. Ross, lecturer in design, Harvard University. Experience: teaching eighteen years.
- EDITH C. MERCHANT, evening instructor in freehand drawing. Normal Art School, 1908. Experience: Teaching, Evening Drawing School, Lowell, Mass.; Supervisor of Drawing, Pepperell, Mass.

COTTON YARNS*

STEPHEN E. SMITH, chief instructor. Lowell Textile School, 1900. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.; Atlantic Cotton Mills, Lawrence, Mass.; Shaw Stocking Company, Lowell, Mass.

LOUIS C. PLAYDON, evening instructor in cotton spinning. Lowell Textile School, Evening Class, 1914. Experience: Atlantic Mills, Lawrence, Mass.; Pacific Mills, Lawrence, Mass., and Dover, N. H.

GEORGE GOODCHILD, evening instructor in cotton spinning. Lowell Textile School, Evening Class, 1903. Experience: draftsman, Saco-Lowell Shops, Lowell, Mass.

WOOLEN AND WORSTED YARNS

EDGAR H. BARKER, chief instructor. Massachusetts Institute of Technology, 1896. Experience: Pacific Mills, Lawrence, Mass.; E. Frank Lewis, Lawrence, Mass.; wool scouring.

JOHN N. HOWKER, instructor in wool sorting and scouring. Technical School of Saltaire near Bradford, England; certificate from City and Guilds of London. Experience: Saltaire Mills, Yorkshire, England; Goodall Worsted Company, Sanford, Maine; Arlington Mills, Lawrence, Mass.

GUY E. BRANCH, instructor in worsted yarns. Lowell Textile School, Evening Class, 1915. Experience: Pacific Mills, Lawrence.

JOHN C. LOWE, evening instructor in worsted yarns. Lowell Textile School, Evening Class, 1911. Experience: Wood Worsted Mills, Lawrence, Mass.

FINISHING

ARTHUR A. STEWART, chief instructor. Lachine Academy, Canada; Lowell Textile School, 1900. Experience: Dominion Woolen Manufacturing Company, Montreal, Canada; American Woolen Company Mills; Nonantum Worsted Mills, Newton, Mass.; instructor in woolen and worsted yarns, Lowell Textile School.

C. LEONARD GLEN, instructor in finishing. Experience: Dunnell Mfg. Co., Pawtucket, R. I.; U. S. Finishing Co., Pawtucket, R. I.; O'Bannon Corporation, West Barrington, R. I.

LANGUAGES AND HISTORY

LESTER H. CUSHING, A. B., chief instructor. Harvard College, 1911.

PHYSICAL CULTURE

DAVID B. MOREY, S. B., Dartmouth College, 1913. Member of Philadelphia Baseball Club, American League, season 1913; Assistant Coach, Dartmouth College Foot Ball Team, Fall 1913; studied abroad on Physical Culture. Experience as coach for various teams in preparatory schools.

ARCHIBALD R. GARDNER, M. D., medical adviser. Harvard University, 1902.

ALUMNI ASSOCIATION

The Alumni Association of the School holds its annual meeting and banquet in February of each year at the Hotel Vendome, Boston, Mass.

The membership of the Association is restricted to graduates of the day school and to those who have attended the school for one year. Honorary membership is open to the Board of Trustees, the Faculty and such others as may be elected by the Association.

The officers for the year 1918 are:

President:	James F. Dewey, '04
Vice-President:	John H. Hunton, '11
Secretary-Treasurer	.. Arthur A. Stewart, '00

Board of Directors: The President, Vice-President, Secretary-Treasurer, Frederick D. Manning, '11, for one year and H. W. Leitch, '14, for two years. Communications should be addressed to Arthur A. Stewart, Lowell Textile School.

ENTERTAINMENT COMMITTEE

Robert R. Sleeper, '00, <i>Chairman</i>	Royal P. White, '04
Everett B. Rich, '11	A. J. Hennigan, '06

OLNEY CHEMICAL ALUMNI OF THE LOWELL TEXTILE SCHOOL

This association was organized in 1898, for the purpose of keeping its members in closer relationship with each other and the school.

The membership consists of evening graduates from any of the advanced courses in chemistry and dyeing of the Lowell Textile School as active members, and graduates of two year elementary chemistry course as associate members, and is composed of one hundred members at present.

The annual meeting is held during the winter months and the annual reunion is held some Saturday of June at a place selected by the Board of Control.

OFFICERS

President:	Samuel J. Nichol, Lowell, Mass.
Vice-President:	James H. Spurr, Jr., Lawrence, Mass.
Secretary and Treasurer:	Alexander T. Herron, Lawrence, Mass.

BOARD OF CONTROL

Harry Buckley, Methuen, Mass.	Samuel Stott, Methuen, Mass.
James W. Myers, Lowell, Mass.	George Stewart, Lowell, Mass.

For information regarding this association please apply to Alexander T. Herron, 55 Bodwell St., Lawrence, Mass.

This association will offer each year a book prize to the evening graduate who attains the highest standing in any one of the advanced courses of the Chemistry and Dyeing Department.

The winner of this prize for 1918 was Tom Peel, Lawrence, Mass.

AWARDS FOR PROFICIENCY IN FIRST AND SECOND YEAR CHEMISTRY

The following is a list of awards made to day students on June 1, 1917, for proficiency in first and second year chemistry, as per Special Awards of Merit on Page 61.

FIRST:—Ten dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship in *First Year Chemistry*.

Awarded to Rupert Francis Billings.

SECOND:—Five dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship in *First Year Chemistry*.

Awarded to Moses Hyman Goldman.

THIRD:—Ten dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during the *Second Year*.

Awarded to Parker Wyman Longbottom.

FOURTH:—Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during the *Second Year*.

Awarded to Eric Thursten Lawrence Laurin.

Honorable mention of Arthur Julius Anderson.

Honorable mention of Carroll Lewis Brainerd.

Honorable mention of Philip James White.

The above sum to be invested in books.

Medal of the National Association of Cotton Manufacturers awarded to Henry Sokolsky.

Graduates with Titles of Theses

Lawrence Burnham Wood, Beverly, Mass.
Bachelor of Textile Chemistry
"Study of Spots, Stains and other Irregularities occurring in
Connection with Dyed Textiles"

Diplomas awarded as follows June 1, 1917:

Wilbur French Berry,	Wool Manufacturing "The Manufacture of a Woolen Cheviot"	Worcester, Mass.
Elmer Clark Matthews,	Wool Manufacturing "Fabricating a Worsted Serge"	Boston, Mass.
Lawrence Dennis O'Connor,	Textile Engineering Thesis with Alfred E. Davieau, June, 1916.	Woburn, Mass.
George Keyes Ripley,	Wool Manufacturing "The Manufacture of a Staple Oxford"	Troy, N. H.
Carl Gustof Verner Sjostrom, Jr.,	Textile Design	Ware, Mass.
Albert William Sturtevant,	Chemistry and Dyeing "Manufacture of 1-8 Amido Naphthol 3-6 Di-sulphonic Acid (H acid)"	Lowell, Mass.
Leslie Emans Sutton,	Cotton Manufacturing "The Manufacture of a Cotton Shirting"	Great Barrington, Mass.

EVENING CLASS OF 1917

Certificates awarded as follows, April 11, 1917:

COURSE Ia—2 YEARS. (Cotton Spinning)

Ariston Kimball Barrows	Lowell, Mass.
Carl Sumner Fleming	" "
Robert Frederick Herrick, Jr.	" "
Thomas Kevin Kearney	" "
Robert Herman Kiessling	Roslindale, "
Frederick William Leaver	Methuen, "
William Thomas Mathews	Lowell, "
Elmer William Moffatt	" "
Frank Malackie Paul	" "
Robert John Rutledge	" "
William Shaw	" "
Harry Lawrance Wheeler	" "
Percy Ernest Yeates	Boston, "

COURSE Ia—3 YEARS. (Cotton Spinning)

Harry James Hayward	Lawrence, Mass.
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COURSE Ib—1 YEAR. (Knitting)

Walter Gamage Kitchen	Lowell, Mass.
Louis Joseph Parent	" "

COURSE IIb—3 YEARS. (Worsted Spinning)

William Francis Brandy	Lawrence, Mass.
Frederic Stacey Gilley	Somerville, "
Percy Whiteoak	Lowell, "

COURSE IIIa—3 YEARS. (Textile Design)

John Thomas Bamford	Lawrence, Mass.
Julvin Joseph Coolens	Lowell, "
William Howard Hall, Jr.	" "
George Edward Hibbert	" "
John Howker	" "
James Archibald MacGeoch	Lawrence, "
Richard Clarence O'Brien	Roxbury, "
William Lorenzo Wilkinson	North Andover, "
George Henry Wilton	" " "

COURSE IIIb—3 YEARS. (Freehand Drawing)

Alma Marion Barry	Lowell, Mass.
Alice May McNabb	" "
Mary Antoinette Naud	" "
Taxiarchis Zissis Protopapas	" "

COURSE IVa—2 YEARS. (Elementary Chemistry)

Walter Francis Dawson	Lowell, Mass.
Henry Dustin Grimes	Lawrence, "
Archibald Kerr Innes	" "
Frank John Kannheiser	" "
Leo Joseph Kennedy	Lowell, "
Raymond Joseph Kenney	" "
George Joseph Loupret	" "
Thomas Russell McDermott	" "

William John Magee	Lawrence, Mass.
Charles Leslie Parker	" "
George Ernest Parkhurst	" "
Frederic Archibald Prisley	" "
Arthur Clifford Slater	North Andover, "
Joseph Talbot	Lawrence, "
Carl Toepler	" "
Joseph Arthur Tremblay	Lowell, "

COURSE IVb—3 YEARS. (Textile Chemistry and Dyeing)

William John Allen	Lawrence, Mass.
Reginald Crabtree Atkinson	Lowell, "
William Francis Brandy	Lawrence, "
Alexander Thomas Herron	" "
Lewis Nathan Mears	Ballardvale, "

COURSE Va—1 YEAR. (Cotton Weaving)

Leon Guileaum Coolens	Lowell, Mass.
Raymond Francis Corkery	" "
Alderic Wilfrid Fortier	" "
James Clarence Eunnell	" "
Robert John Rutledge	" "
Edward Benedict Sullivan	" "
Arthur Prescott Whittier	" "
Roger Winship	" "

COURSE Vb—1 YEAR. (Woolen and Worsted Weaving)

Charles Martin Axon	Andover, Mass.
Fredrick Charles Bohne	Methuen, "
Arthur Deleu	Lawrence, "
George John Drescher	" "
Raymond Charles French	" "
Leo Alfons Lutz	" "
Paul Peter Lutz	" "
James Joseph McCann	" "
Ernest Gunnar Noring	" "
Louis Adam Pekarski	" "
Walter Ernest Todd	Lowell, "

COURSE VIa—3 YEARS. (Elements of Engineering)

Wilfred Bottomley	Lawrence, Mass.
Raymond Stoddard Cheney	Methuen, "
Edward Francis Durgin	Lawrence, "
George Felix Langevin	Lowell, "
May Ella Patricia Lowney	" "
Alwin Lutz	Lawrence, "
Theodore Edwin Meinelt	" "
Samuel Stevens Sawyer	Lowell, "
Thomas Chester Thyng	Lawrence, "

COURSE VIb—3 YEARS. (Mechanical Drawing)

John DeSpencer	Lawrence, Mass.
Andre Joseph LaVigne	Lowell, "
William Charles Ready	" "
Kenneth Bryant Roberts	" "
Hughes Bernard Schultz	Lawrence, "
Raymond Carl Schwarzenberg	" "

COURSE VI—2 YEARS. (Machine Shop Practice)

Gilbert Roscoe Merrill	Lowell, Mass.
Alphonse Wilfrid Morin	" "
Mansfred Monson Pihl	" "
Joseph Smith	" "

COURSE VII—I YEAR. (Woolen and Worsted Finishing)

Guy Eugene Branch	Lawrence, Mass.
William Bruce	North Andover, "
Arthur Dean	Lowell, "
Carl Calman Fritz	Lawrence, "
Frederick Thomas Langford	Methuen, "
Berry Laycock	Lowell, "
Francis John McGill	" "
Richard Clarence O'Brien	Roxbury, "
Francis Joseph Perron	North Andover, "
Raymond Hector Schuster	Lowell, "
Lloyd Kenison Sharples	Haverhill, "
Miles Henry Smith	Lawrence, "
Adolph Julius Winkler	Lowell, "

REGISTER OF DAY STUDENTS

1917-1918

Fourth Year

Name	Course	Address
Clark, Earl W.	IV	Salem Depot, N. H.
de Sa, Francisco	VI	Bahia, Brazil
Fitzgerald, John F.	IV	Woburn, Mass.
Merrill, Gilbert R.	VI	Lowell, "
Palais, Samuel	IV	Roxbury, "
Stevens, Raymond R.	IV	Dracut, "
Stiegler, Harold W.	IV	Lawrence, "
Sunbury, Herbert E.	VI	Wamesit, "

Third Year

Anderson, Arthur J.	IV	Concord, N. H.
Ashworth, Ralph W.	II	Charlton City, Mass.
Brainerd, Carroll L.	IV	Bradford, "
Donovan, George	I	Somerville, "
Everett, Charles A.	IV	Methuen, "
Frary, Stanley H.	I	Lowell, "
Gooding, Francis E.	IV	Lawrence, "
Gottesman, Louis	IV	Roxbury, "
Gould, Norman C.	VI	Huntington, "
Jones, Nathaniel E.	VI	Newburyport, "
Kaatze, Julius	VI	Lawrence, "
Mauersberger, Herbert R. C.	III	Passaic, N. J.
Mullaney, John F.	VI	Lowell, Mass.
Plaisted, Webster	II	Arlington, "
Sanborn, Frank M.	VI	West Kennebunk, Me.
Sullivan, Walter J.	IV	Ayer, Mass.
Wells, Ai E.	VI	Lowell, "
Woo, Tsun-kwei	VI	Shanghai, China
Young, Andrew	Sp. IV	Irrington, N. J.

Second Year

Almquist, George J.	I	Passaic, N. J.
Berg, Ralph A.	IV	Chelmsford, Mass.
Billings, Rupert F.	IV	Lowell, "
Brainerd, Carl E.	IV	Bradford, "
Brandt, Carl D.	VI	Lowell, "
Burbeck, Dorothy M.	IV	" "
Cochran, Thomas C.	IV	Natick, "
Doyle, John H.	II	North Brookfield, "
Fleischman, Meyer	IV	Manchester, N. H.
Forsait, Charles H.	VI	Nashua, "
Goldman, Moses H.	IV	Dorchester, Mass.
Henry, Rodman C.	II	Pittsfield, "
Huse, Charles H.	III	Lowell, "
Lewis, Frank H.	VI	Pelham, N. H.
Lewstein, Boris	IV	New York, N. Y.
Mason, Lloyd A.	IV	West Somerville, Mass.
Mirskv, Leon R.	II	Nashua, N. H.
Montgomery, Charles W.	II	North Adams, Mass.
Noone, Paul L.	IV	Merrimac, "

Name	Course	Address
Quinlan, William H.	VI	Somerville, Mass.
Roche, Henry F.	III	Bradford, "
Russell, John W.	IV	Lawrence, "
Sargent, Helen A.	Sp. III	Lowell, "
Scanlon, Andrew A.	IV	Lawrence, "
Schaetzel, Andre P.	IV	New York, N. Y.
Scoboria, Glendon A.	VI	South Chelmsford, Mass.
Scott, Gordon M.	IV	Madison, Me.
Shea, Edward A.	II	Everett, Mass.
Smith, Sylvanus P.	VI	Gloucester, "
Strickland, George H.	IV	Lawrence, "
Suhlke, Waldo E.	IV	Leominster, "
Whittier, Sidney B.	VI	Waban, "
Wood, John M.	VI	Hopedale, "
Wotkiewicz, Michael J.	VI	Adams, "
Zisman, Louis S.	IV	Roxbury, "

First Year

Adams, Donald F.	VI	Chelmsford, Mass.
Alexander, William H.	VI	Lawrence, "
Band, Roy F.	VI	West Somerville, "
Berlin, Louis	IV	Arlington, "
Bidwell, Leonard F.	IV	Glastonbury, Conn.
Boylston, Theodore W.	IV	Milton, Mass.
Broadley, Frank J.	IV	Lowell, "
Christofferson, Carl A.	IV	So. Acton, "
Clayton, Harold E.	VI	Williamstown, "
Danahy, Joseph P.	IV	Canton, "
Desmarais, Albert E.	VI	North Grafton, "
Downey, Hugh F., Jr.	IV	Lowell, "
Ellis, Charles A.	VI	Chelmsford, "
Enloe, Winfred P.	Sp. III	Roanoke, Va.
Feinberg, Morris	IV	Boston, Mass.
Gilliam, George	Sp. III	Henderson, N. C.
Goosetrey, Arthur	IV	Crompton, R. I.
Goosetrey, John T.	IV	" "
Greenblatt, Joseph	VI	Dorchester, Mass.
Hittinger, Richard, Jr.	VI	Belmont, "
Hodge, Harold B.	VI	North Chelmsford, "
Karanfilian, John H.	VI	Monson, "
Kenney, Raymond J.	Sp. VI	Lowell, "
Kilduff, Frank B.	—	Dorchester, "
Lemire, Joseph E.	VI	Lowell, "
Levison, Abner S.	IV	Middletown, Conn.
McGowan, Henry E.	VI	Lowell, Mass.
McLaren, William H.	Spec. III	New York, N. Y.
McNeil, Ernest F.	IV	Stoughton, "
Mackewitsh, William	Sp.	Lowell, "
Marder, Harry	IV	Boston, "
Marshall, George W.	VI	Warren, "
Mathieu, Alfred J.	II	Woonsocket, R. I.
Michelsen, Benjamin F.	I	Andover, Mass.
Moore, Charles G.	IV	Waltham, "
Morey, David B.	Sp. IV	Malden, "
Morrill, Arthur L.	VI	Saco, Me.
Nickerson, Benjamin H.	IV	Warren, Mass.
Orr, Andrew S.	IV	Richmond Hill, N. Y.

Name	Course	Address
Pepler, William R.	I	Taunton, Mass.
Phaneuf, Maurice P.	III	Nashua, N. H.
Precourt, Joseph O.	VI	Woburn, Mass.
Raeford, Garland	II	Houston, Texas
Rice, Joseph A., Jr.	III	Southbridge, Mass.
Richardson, Philip A.	IV	Lowell, "
Richey, Irving G.	Sp. III	New Haven, Conn.
Robinson, Russell	VI	Haverhill, Mass.
Rosch, Philip	III	Lawrence, "
Royal, Louis M.	VI	West Somerville, "
Silcox, Frederick E.	VI	Lowell, "
Smith, Herbert L.	IV	Woonsocket, R. I.
Sweet, Arthur D.	VI	Lowell, Mass.
Taft, James C.	Sp. III	Greenville, N. H.
Thompson, Arthur R., Jr.	IV	Lowell, Mass.
Toepler, Carl	IV	Lawrence, "
Townsend, Henry A.	II	Milton Mills, N. H.
Turner, Florence E.	Sp. III	Lowell, Mass.
Washburn, John M., Jr.	IV	" "
Woodies, Ida A.	Sp. VI	Lowell, "
Worssam, Francis H.	IV	Lynn, "

REGISTER OF EVENING STUDENTS

1917-1918

Explanatory Note

Course Ia	Cotton Spinning
Course Ib	Knitting
Course IIa	Woolen Spinning
Course IIb	Worsted Spinning
Course IIIa	Textile Design
Course IIIb	Freehand Drawing
Course IVa	Elementary Chemistry
Course IVb	Textile Chemistry and Dyeing
Course IVc	Analytical Chemistry
Course IVd	Textile and Analytical Chemistry
Course Va	Cotton Weaving
Course Vb	Woolen and Worsted Weaving
Course Vc	Dobby and Jacquard Weaving
Course VIa	Elements of Engineering
Course VIb	Mechanical Drawing
Course VIc	Machine Shop
Course VIe	Mathematics
Course VIIa	Cotton Finishing
Course VIIb	Woolen and Worsted Finishing

Post Graduate

Name	Course	Address
Barry, Alma M.	IIIb	Lowell, Mass.
Branch, Guy E.	Iib	Lawrence, "
Lambert, Mary E. L.	IIIb	Lowell, "
LaRue, Isabella G.	IIIb	" "
McNabb, Alice M.	IIIb	" "
Morin, Alphonse W.	VIc	" "
Naud, Marie A.	IIIb	" "
Smith, Joseph	VIc	" "
Smith, William F.	VIc	" "

Third Year

Adsit, Frederick N.	VIa	Lowell, Mass.
Almstrom, August S.	VIb	" "
Anderson, Henry E.	VIb	" "
Asselin, Joseph E.	VIa	" "
Ballinger, Raymond F.	VIa	North Chelmsford, "
Bassett, George J.	VIb	Lowell, "
Bowie, Roland J.	VIa	Lawrence, "
Bryden, Frederick A., Jr.	IVb	North Andover, "
Bunting, Walter F.	VIa	Lawrence, "
Campbell, Charles F. P.	VIb	Lowell, "
Carney, William H.	VIa	" "
Colburn, George B.	VIa	" "
Conaton, Thomas J.	Ia	" "
Conway, John E., Jr.	VIa	" "
Crowley, Harold F.	VIa	" "
Crumbie, Charles	Iib	" "

Name	Course	Address
Davis, Ervin	IIb	Lawrence, Mass.
Dean, Walter E.	VIa	" "
Doran, George H.	VIa	Lowell, "
Dwyer, David H.	IIIb	" "
Eaton, William H.	VIa	" "
Entwistle, Warren R.	VIa	" "
Espinola, Manuel J.	VIa	" "
Fitzgerald, William E.	VIa	" "
Fluet, Joseph A.	VIa	Lawrence, "
French, Walter B.	VIa	Lowell, "
Greenwood, William	VIIb	" "
Hamilton, William G.	IIIa	" "
Higginbottom, Harold J.	IVb	Lawrence, "
Higginbottom, Joseph J.	VIa	Lowell, "
Hillman, Ralph G.	VIa	Pelham, N. H.
Hoh, Clemens C.	IIb	Salem, "
Howker, John	Ia	Lowell, Mass.
Hutton, Thomas V.	VIa	" "
Kearney, Thomas K.	Ia	" "
Kellett, Harold I.	IIIa	Lawrence, "
Labatte, Philomena U.	IIIb	Lowell, "
Logan, Robert F.	IIIa	Lawrence, "
McGill, Charles F.	IIIa	Lowell, "
McInerny, Walter S.	VIa	" "
McLaughlin, Lawrence H.	VIa	" "
Magrath, William F.	VIa	Lawrence, "
Mathews, William T.	Ia	Lowell, "
Matthews, George A.	VIa	" "
Merrill, Gilbert R.	Ia	" "
Miller, George C.	VIa	" "
Moss, Joseph	VIa	" "
Neel, Andrew	IVb	Lawrence, "
Nichol, Samuel J.	IVc	Lowell, "
O'Hearn, Patrick J.	VIa	" "
Palm, Herbert E.	Ia	" "
Patterson, Alfred H.	IIb	Lawrence, "
Paul, Malackie F.	Ia	Lowell, "
Peel, Tom	IVb	North Andover, "
Picard, Marie L. C.	IIIb	Lowell, "
Preble, George A.	IVb	" "
Raney, Walter A.	VIa	" "
Slater, Hartley	IIb	Methuen, "
Steere, Thomas W.	Ia	Lowell, "
Swanson, Victor E.	IVb	" "
Tellier, Mary B.	IIIb	" "
Thomas, Fred N.	IIb	Methuen, "
Ward, Charles	VIIb	Lawrence, "
West, Richard E.	IVb	Lowell, "
Wheeler, Harry L.	Ia	Lawrence, "
Whitley, Walter R.	VIIb	" "

Second Year

Almquist, George J. E.	IIIa	Lowell, Mass.
Armstrong, John W.	IVa	" "
Azadian, Sctrak	IVa	" "
Bachmann, Walter H.	VIIb	" "

Name	Course	Address
Bamber, William E.	VIa	Lowell, Mass.
Bairon, Fred H.	IIb	Lawrence, "
Barrows, Raymond M.	VIb	Lowell, "
Bartlett, Winthrop C.	IVa	" "
Bergsten, Frank A.	VIb	Chelmsford, "
Black, David E.	IVa	Lowell, "
Blades, Albert H.	IVa	Lawrence, "
Blanchard, John W.	VIa	Lowell, "
Bouthillette, Jean C.	VIb	" "
Bower, Ernest F.	IVa	Methuen, "
Bryden, Fred A., Jr.	IVb	North Andover, "
Buckley, Harry	Ia	Methuen, "
Burton, Harold S.	VIb	Lawrence, "
Cahill, John J.	VIb	Lowell, "
Carruthers, Joseph, Jr.	VIa	" "
Cheney, Harold G.	VIa	" "
Cinqmars, Adelard D.	IIIa	" "
Cochrane, William	IVc	" "
Coffin, Charles D.	VIa	" "
Conley, John F.	VIa	" "
Corcoran, Andrew A.	VIa	" "
Crawford, Caroline W.	IIIb	" "
Cronin, William	VIa	Ballardvale, "
Cummings, Edward S.	IIIa	Lowell, "
Curtin, Ralph	IIb	Lawrence, "
Davis, Alfred A.	VIb-VIa	Lowell, "
Diman, Lewis B.	IIb-IIIa	" "
Dionne, Charles A.	VIb	" "
Dionne, Elzear J.	VIb	" "
Dobbs, Roy F.	IIb	" "
Dolan, Harry W.	IIIa	" "
Doyle, Joseph A.	IVa	Lawrence, "
Duffy, Charles D.	IIb	Lowell, "
Duggan, John F.	VIa	" "
Dwyer, David H.	IIIb	" "
Ecclestone, Arthur G.	IVa	" "
Fairburn, George F.	IVa	Lawrence, "
Fieldhouse, Ernest	IIIa	Methuen, "
Fogg, Arthur E.	VIb	Lowell, "
Furch, Robert, Jr.	IIIa	Andover, "
Gagnon, Marie C.	IIIb	Lowell, "
Gagnon, Rene A.	VIb	" "
Gardiner, Raymond E.	VIa	" "
Gaulin, Achille G.	VIa	" "
Geary, William F.	VIb	" "
Gervais, Armand S.	VIa	" "
Gifford, Frederick O.	IVa	" "
Gilet, Albert J.	IVa	" "
Gionet, Arthur W.	IIIa	" "
Greenhalgh, Frank G.	IIIa	" "
Greenwood, Edgar	VIa	" "
Greenwood, George E.	VIb	" "
Grons, Edward	VIb	" "
Hager, Wilbur F.	VIa	Lawrence, "
Hardy, Harry D.	IVa	Nashua, N. H.
Harnden, Edward F.	VIa	Lowell, Mass.
Hendry, Robert A.	IIIa	Lawrence, "

Name	Course	Address
Higgins, William	IVa	Lawrence, Mass.
Hill, Mabel I.	IIIb	Lowell, "
Hodgson, Herbert	IVa	Methuen, "
Holly, Thomas K.	IVa	Lawrence, "
Holman, Edith E.	IIIb	Lowell, "
Ilsley, Lilla C.	IIIb	" "
Johnson, Alfred N.	VIa	" "
Johnson, Milton E.	IVa	Lawrence, "
Kanama, Philip Y.	IVa	Lowell, "
Kelley, James C.	VIa	" "
Kaphalaia, Nicholas B.	VIb	" "
Lannon, James W.	VIa	" "
LaPointe, Emile R.	VIb	" "
Larson, Evald B.	VIb	" "
Laurin, Harold E.	VIb	" "
Laurin, Mary A.	IIIb	" "
Lawlor, Jane F.	IIIb	North Andover, "
Leaver, Harry	IVb	Methuen, "
Locke, Jack A.	VIb	Lowell, "
Lorigan, Charles J. W.	VIa	" "
Lowell, Walter D.	IVa	Methuen, "
McCann, Arthur	IVa	Lowell, "
McCarthy, Luke E.	IIIb	" "
McCoombs, Alton H.	VIb	" "
McCusker, Joseph F.	VIa	" "
McDermott, Edward L.	VIa	" "
MacKenney, Esther M. M.	IIIb	" "
Malley, Albert J.	IIb	Lawrence, "
Malo, Victor H.	VIa	Lowell, "
Markham, Ralph W.	IVa	" "
Martel, May A.	IIIb	" "
Meador, Frederick T.	Ia	" "
Morgan, Harry W.	IIb	Lawrence, "
Morgan, Michael D.	IVa	Lowell, "
Morrison, Nathan H.	VIa	" "
Muldoon, Francis A.	VIa	" "
Neel, James B.	IVa	Lawrence, "
Noel, Arthur J.	VIa	Lowell, "
O'Brien, Alice	IVa	" "
O'Connor, George A.	VIa	" "
O'Loughlin, John B.	VIa	" "
Ortel, Charles	VIa	" "
Palmer, Thomas R.	IIIa	Lawrence, "
Patterson, Robert J.	IIIa	Dracut, "
Peel, Tom	IVb	North Andover, "
Peever, Alfred	IVa	Methuen, "
Petty, John	Ia	" "
Powers, Roy G.	VIa	Lowell, "
Rapteas, Peter	VIa	" "
Rhodes, William H.	IVa	Ward Hill, "
Richard, Eugene T.	VIa	Dracut, "
Rivinius, Hendel V.	Ia	Lowell, "
Robillard, Hector E.	VIa	" "
Rolfe, Frederic G.	VIa	" "
Ronan, William J.	IVa	" "
Rousseau, Joseph E.	Ia	" "
Ryan, Michael	VIa	" "

Name	Course	Address
Sainis, Stephanos S.	IVa	Lowell, Mass.
Scott, Gordon M.	IIIa	" "
Searle, Edward H.	Ia	Methuen, "
Severance, Malcolm B.	IVa	Lawrence, "
Sheriff, William, Jr.	IVa	" "
Smith, Edwin H.	IVb	Lowell, "
Speed, Frederick H.	VIb	Lawrence, "
Stevens, Harold W.	IVa	Lowell, "
Storin, Edmund A.	IVa	" "
Swensn, Arthur S.	VIa	Andover, "
Sykes, Alvin E.	Ia	Lowell, "
Taylor, Albert	VIb-VId	North Chelmsford, "
Thomson, John D.	IVa	Lawrence, "
Thornhill, Charles	IVa	" "
Topjian, Paul K.	VIb	Lowell, "
Trow, Henry J.	VIa	Ballardvale, "
Valentine, Alexander B. R.	IIIa	Andover, "
Varnum, Arthur C.	I Ib	Lowell, "
Vian, Armand	I Ib	" "
Wells, Leland A.	VIb	" "
West, Richard E.	IVb	" "
Wilkinson, Herbert R.	IVa	Lawrence, "
Wroblewski, Teofil	VIa	Lowell, "

First Year

Adams, Donald F.	VIe	Chelmsford, Mass.
Adams, Edwin C.	IVa	Lowell, "
Adie, Ralph E.	VIa	" "
Alcott, Edward H.	VIb	" "
Allen, Leo F.	Vb	" "
Anderson, Albert M.	VIb	" "
Armstrong, Charles L.	Vb	" "
Ashburn, James, Jr.	VIb	Lawrence, "
Ashford, Robert G.	IVa	North Andover, "
Ashjian, Krikor M.	VIa	Lawrence, "
Asselin, Hector R.	Ia	Lowell, "
Austin, Allbon M.	IIIa	Dracut, "
Avery, Leon J.	IVa	Lowell, "
Bancroft, William G.	VIb	Methuen, "
Bardsley, James A.	Vb	Lawrence, "
Barrett, John H.	VIIa	Lowell, "
Barry, Alma M.	IIIa	" "
Barry, Thomas S.	VIa	" "
Bartlett, Earl S.	VIb	Lawrence, "
Barton, Fred H.	IVa	Lowell, "
Beale, Benjamin	IVa	Lawrence, "
Bean, Winthrop S.	IVc	Lowell, "
Beattie, Thomas	IVa	" "
Beauchesne, Henry J.	IIIb	" "
Beaulieu, Horace P.	Vb	Lawrence, "
Bedard, Joseph	Ia	Lowell, "
Bell, Henry G.	VIa	" "
Bell, John R. V.	VIb	" "
Berian, Almer F.	VIa	" "
Betoncourt, Arthur J.	VIb	" "
Bird, William F.	IVa	Lawrence, "

Name	Course	Address
Bolan, John J.	IVa	Lowell, Mass.
Bordeleau, George A.	IVc	" "
Bosca, Joseph H.	Vib	" "
Bottis, James	Vib	Lawrence, "
Boulard, Armand J.	VIa	Lowell, "
Bourdon, Arthur A.	Vib	" "
Boutin, Ernest	IIIa	" "
Bowers, John J., Jr.	VId	" "
Bowyer, William	VIa	Lawrence, "
Boyle, John E.	Vib	Lowell, "
Boyle, Peter J.	VId	" "
Boyle, William P.	VIa	" "
Bradley, Patrick E.	Vib	" "
Brannan, Rosco N.	IVa	" "
Brennan, James F.	IVa	" "
Brissett, Rupert N.	IIIa	" "
Brophy, James A.	VIa	" "
Brown, Carlton H.	Ia	Mattapan, "
Brun, Ernest A.	VId	Lowell, "
Brunelle, Paul H.	VIa	" "
Buntel, Roy T.	Iib	Tyngsboro, "
Buntel, Thomas J.	Vib	" "
Burke, Thomas J.	Vib	Lowell, "
Burke, William A.	VIa	" "
Burton, Harold S.	Vib	Lawrence, "
Byrne, Joseph W.	IVa	" "
Byrne, Michael F.	VIa	Lowell, "
Cahill, Paul J.	VIa	" "
Campbell, Charles F. P.	VId	" "
Campbell, Frank J.	VId	" "
Campbell, George A.	IVa	North Andover, "
Cannie, George A.	VIa	Lowell, "
Carlin, Thomas J.	VIa	" "
Carpentier, Clifford	VIa	Graniteville, "
Casey, William F.	Vib	Lowell, "
Champagne, Donat J.	VId	" "
Chandler, Neil W.	VIa-VIe	North Billerica, "
Chandler, Percy W.	Vib	Lowell, "
Chapman, George S.	VId	Chelmsford, "
Chapman, Herbert C.	VIa	Lowell, "
Chaput, George W.	VIa	" "
Charest, Alfred	VIIb	Methuen, "
Charett, Wilfred A.	VIa	Lowell, "
Cinqmars, Adelard D.	Ia	" "
Clancy, Francis	IIIb	" "
Clark, Ralph L.	VId	" "
Claveau, Ernest J.	Va	" "
Clement, Harry L.	VIa	" "
Clement, Joseph W.	VIa	" "
Clermont, William	VIa	" "
Cockerline, William R.	Vib	" "
Coe, Herbert S.	VId	" "
Coffin, Charles D.	Vib	" "
Cogger, Mary C.	IIIb	" "
Coggins, Sherwood G.	Vib	" "
Cogswell, Charles F.	Vib	" "
Cohen, Harry D.	VId	Lawrence, "

Name	Course	Address
Colburn, George B.	VIe	Lowell, Mass.
Collins, Matthew	VIa	South Lawrence, "
Condon, Richard E.	VIb	Lowell, "
Conlon, Martin J.	Vb	" "
Conlon, Thomas P.	VIb	" "
Connors, Bernard F.	VIb	" "
Constantineau, Albert A.	VId	" "
Cooper, James W.	VId	" "
Coppen, William F. S.	VId	" "
Corcoran, Henry R.	VIa	" "
Corey, James E.	VIa	" "
Corey, John H.	VIb	" "
Corfield, Fred	VId	" "
Corson, Arthur L.	VId	" "
Corson, Howard A.	VId	" "
Costello, Earle W.	IVa	" "
Costello, Leo V.	IVa	" "
Cote, Joseph T. H.	VIa	" "
Cote, Leo	VIa	Graniteville, "
Cox, Charles S.	VIb	Lowell, "
Crawford, Parker W.	IIIb	" "
Crowley, Harold F.	VIe	" "
Cullinan, William H.	IVa	Collinsville, "
Currier, Charles T.	IVa	Lowell, "
Currier, Harold G.	IIb	Haverhill, "
Dalton, Harry C., Jr.	Ia	Andover, "
Damon, Walter L.	VIb	Lowell, "
Davis, Lester S.	VIb	North Billerica, "
Dawson, Walter F.	IVc	Lowell, "
Dean, Elmore T.	VIb	" "
Dean, Eugene F., Jr.	IVa	" "
Delaney, Joseph P.	VIb	" "
Delehanty, Richard J.	IIa	" "
Demers, Adolphe	VIb	" "
Demers, Henry O.	VId	" "
Denault, Charles H.	IIIb	" "
Derushia, Wilfred J.	VId	" "
Desmarais, Albert E.	VIe	Chelmsford, "
Desmarais, Mary B. I.	IIIb	Lowell, "
Desmond, Walter P.	VIa	" "
Dinsmore, Martha G.	IIIb	" "
Dionne, Louis L.	IVa	" "
Dixon, William T.	VIa	Tyngsboro, "
Dolan, John V. D.	VIa	Lowell, "
Dooley, Mary M.	IIIb	" "
Doran, George H.	VIe	" "
Douglas, Charles W.	IIb	Forge Village, "
Doyle, Arthur X.	IIIb	Lawrence, "
Doyle, Daniel A.	VIa	North Andover, "
Draper, Jason S.	VIa	Lawrence, "
Driscoll, William	IIb-IIIa	Brookline, "
Ducharme, Francis	VId	Lowell, "
Duffy, Charles D.	IIb	" "
Duffy, Luke D.	VId	" "
Dufresne, Arthur	VIb	" "
Duemling, Karl E.	VId	" "
Dumont, Gerald	IVa	Lawrence, "

Name	Course	Address
Dumont, Thomas T.	VIa	Lowell, Mass.
Dunfey, Richard B.	IIIb	" "
Dunn, Edward J., Jr.	VIa	" "
Dyson, John	VIa	" "
Eastwood, Charles E.	IVa	Lawrence, "
Eastwood, John H.	VIa	Andover, "
Edelman, Louis F.	IIIa	Lowell, "
Edwards, James A.	VIa	" "
Englund, Thorsten G.	VIc	" "
Entwistle, Harold R.	Ia	" "
Entwistle, Warren R.	VIe	" "
Eranosian, John	IIIb	" "
Erickson, Arthur W.	VIa	" "
Espanola, Fred J.	Va	" "
Fairburn, George F.	IVa	Lawrence, "
Fall, Harold F.	VIa	Lowell, "
Farrow, Samuel	VIc	North Chelmsford, "
Feeney, Raymond B.	VIa	Lowell, "
Fendel, Frank	IVc	Roxbury, "
Ferris, Valentine E.	IIb	Lawrence, "
Fitzgerald, William E.	VIe	Lowell, "
Flanagan, George F.	VIb	" "
Fletcher, Donald E.	VIa-VIb	" "
Flynn, Thomas W.	VIa	" "
Flynn, William M.	VIb	" "
Fontaine, Leo J.	VIa	" "
Fontz, Antonio S.	IIIb	" "
Ford, Patrick F.	VIa	Lawrence, "
Foster, Herbert L.	VIb	Lowell, "
Fox, Edward A.	VIc	Chelmsford, "
Frank, Merrill	VIc	Lowell, "
French, Harold E.	Vb	Methuen, "
French, Henry C.	IIIa	Lawrence, "
French, Walter B.	VIa	Lowell, "
Friel, Raymond J.	VIb	North Andover, "
Gagnon, Antonio	IIIb	Lowell, "
Gagnon, Edmond J.	IIIb	" "
Gagnon, Wilfred H.	Ia	" "
Garland, Arthur	VIa	" "
Garneau, Arthur	IIIb	" "
Garneau, Philip	VIb	North Andover, "
Gaudette, Albert A.	Ia	Lowell, "
Gelineau, Emrie E.	IVc	" "
Gemmell, James	Va	" "
Geoffroy, Francis A.	IIIa	" "
George, Wallace B.	Ia-IVa	" "
George, Winslow P.	VIc	Chelmsford, "
Giffin, Harold A.	IIIa	Lowell, "
Giglio, James T.	IIb	Lawrence, "
Gillespie, George L., Jr.	IIIa	Lowell, "
Gilligan, William L.	VIb	" "
Ginivan, Martin H.	VIa	" "
Gionet, Arthur W.	Ia	" "
Gleason, Frank H.	IIb-IIIa	" "
Gledhill, John B.	IIIa	Lawrence, "
Goldrick, Edward J.	VIa	Lowell, "
Gow, Robert, Jr.	IVa	" "

Name	Course	Address
Grady, James A.	VIa	Lawrence, Mass.
Grenier, Arthur	VIa	Lowell, "
Griffin, John M.	VIa	Lawrence, "
Grimes, Henry D.	IVb-IVc	" "
Haddon, George G.	VIa	Andover, "
Haley, Arthur F.	VIa	Lowell, "
Hall, Sydney H.	VIa	" "
Hall, Thomas W.	IIIa	" "
Halliday, Frank	IVa	" "
Hallowell, William K.	VIa	" "
Hamblett, Olive L.	IIIb	" "
Hamilton, Leon B.	VIa	Methuen, "
Hamilton, Mildred T.	IIIa	" "
Hammond, Leon R.	VIa	Lowell, "
Hanifin, James F.	VIb	" "
Hansbury, John J.	VIb	" "
Hansen, Henry A.	VIb	" "
Hanson, Edward	VIIa	" "
Hanson, Edwell J.	VIa	" "
Hardman, David B.	IVc	" "
Hardman, George A.	VIa	" "
Harhan, Mary F.	IIIb	" "
Harhan, William T.	IIIb	" "
Harnden, Edward F.	VIb	" "
Harris, Jacob	Ia	Dorchester, "
Hartnett, James F.	VIa	Lowell, "
Hartwell, Marcus H.	IVa	" "
Haviland, Raymond J.	VIb	" "
Hedlund, Oscar E.	VIa	" "
Henley, James	VId	" "
Hermanson, Carl H.	VIb	" "
Hibbs, Chester W.	VIb	" "
Higginbottom, Joseph J.	VIe	" "
High, Reynold G.	IVa	Methuen, "
Hilbert, Oscar E.	VIa	Lawrence, "
Hill, John K.	VIa	Andover, "
Hill, Ralph W.	IIIa	Nashua, N. H.
Hillman, Ralph G.	VIe	Pelham, "
Hills, William	IIIa-Va	Lowell, Mass.
Hinton, Irving E.	IIIa	Lawrence, "
Hodnett, William H.	VIa-VIb	Lowell, "
Hoffman, George D.	VIa	" "
Hogan, Harry V.	VIb	North Chelmsford, "
Holland, Ralph J.	VId	Lowell, "
Holt, Albert	IIIb	" "
Houde, Armand J.	VIa	" "
Howarth, Charles L.	VIIa	" "
Howorth, Walter	Ia	" "
Huff, Roy L.	IIIa	Nashua, N. H.
Hughes, Thomas A.	VIb	Lowell, Mass.
Hull, Theodore M.	VIa	" "
Hunnewell, Myron T.	VIa	" "
Hunt, James F.	IIIa	Lawrence, "
Hutton, Thomas V.	VIa-VIe	Lowell, "
Hyde, Harley C.	IIb-IIIa	" "
Ingalls, Everett D.	VIb	" "
I'Anson, Harold	VIa	" "

Name	Course	Address
Innes, Archibald K.	IVb	Lawrence, Mass.
Janson, Walter	VIa-VIb	Lowell, "
Johnston, Edward H.	VIb	" "
Jones, Nathaniel E.	Ia	" "
Jones, William S. M.	IIIb	" "
Juiris, Anthony	VIb	Chelmsford, "
Kannheiser, Frank J.	IVb	Lawrence, "
Kearney, Gerald P.	IIb-IIIa	" "
Kearney, Joseph W.	VIb	Lowell, "
Kearney, Thomas K.	IIIa	" "
Keating, Edward F.	IIb	" "
Kelleher, Charles F.	Ia	" "
Kelley, Francis T.	VIa	" "
Kelly, James A.	Ia	" "
Kelly, Thomas J.	IIb	Forge Village, "
Kennedy, Leo J.	IVc	Lowell, "
Kennedy, Ruth V.	IIIb	" "
Kenney, Norman W.	Ia	" "
Keramidas, Leonidas B.	VIa	" "
Kilroy, Raymond E.	VIa	" "
Kyriacopoulos, Constantine A.	IIIb	" "
Kyriakou, Nicholas D.	Ia	" "
LaBelle, Ismael	VIa	" "
Laferriere, Henry C.	VIa	" "
LaFrance, Walter J.	VIa	" "
Lajoie, Lucien A.	IIIb	" "
Lambert, Arthur	VIa	" "
Lamy, Emil J.	VIb	" "
Landry, Joseph A.	Vb	" "
Langford, Frederick T.	VIIa	Methuen, "
Langlois, Antoine	VIa	Lowell, "
Lannon, James W.	VIe	" "
LaPointe, Emile R.	VIb	" "
Lapointe, Joseph A.	VIa	" "
Lardner, John H.	VIb	" "
Larkin, James T.	IIIb	" "
Laurin, Phillippe J.	IIb	" "
Lawliss, Charles A.	VIb	Lawrence, "
Leach, Francis M.	VIb	Lowell, "
Leary, Charles J.	VIb	" "
Leary, John F.	VIa	" "
Leavitt, Ernest W.	IVa	" "
LeClerc, Joseph M.	IIIb	" "
Lefebvre, Armand N.	VIb	" "
Levy, Hymen H.	VIa	" "
L'Heureux, Armand F.	IIIa	" "
Lincoln, George C.	IIIa	Watertown, "
Livingston, Harold S.	VIa	Andover, "
Lloyd, Joseph E.	VIb	Lowell, "
Locke, Jack A.	VIa-VIe	" "
Lomas, Harry	IVa	" "
Lord, Raymond S.	IIIb	Lawrence, "
Loureiro, Adriano	IIIa	Lowell, "
Luce, Roland L., Jr.	VIb	Lawrence, "
Lussier, Arthur	VIb	Lowell, "
Lynch, Christopher, Jr.	VIb	Lawrence, "

Name	Course	Address
Lynch, Edward	IIIb	Lowell, Mass.
Lynch, John E.	IIa	" "
Lynch, Leo	IIa	" "
McAdams, Francis G.	VIIb	" "
McCabe, Charles F.	VIId	" "
McCabe, John P.	VIa	" "
McCarthy, George P.	VIId	" "
MacClure, Ernest M.	IIIa	" "
McCullough, Henry W.	VIa	" "
McDermott, John L.	VIIb	" "
MacDonald, John F.	IIIb	" "
McGeoch, James A.	Ia	Lawrence, "
McGrath, William A.	Vb	Lowell, "
McGregor, Paul U.	IIb	" "
McGurn, George L.	VIIb	" "
McInerny, Walter S.	VIe	" "
MacIntyre, John F.	IVa	" "
McIntyre, William G.	VIIa	" "
McKniff, James J.	VIId	" "
McLarney, Cornelius P.	IVa	" "
McLaughlin, John E.	VIId	" "
McMahon, William H.	VIa	" "
McMenemy, John	VIa	Lawrence, "
McNally, William	VIa	Lowell, "
McQueen, Hugh	VIIa	" "
McVickar, William B.	IVa	" "
McVickar, William H.	VIIa	" "
Mackey, James E.	VIIb	" "
Magee, William J.	IVc	Lawrence, "
Maguire, James L.	VIIb	Lowell, "
Mahoney, Frank E.	VIa	" "
Mailey, Howard T.	IVb	Lawrence, "
Main, Percy R.	VIa	Haverhill, "
Mann, Henry E.	VIIb	Lowell, "
Marshall, Leo A.	IIb	Lawrence, "
Martel, Oscar J.	IIIb	Lowell, "
Martin, Frederic N.	Ia	Methuen, "
Martin, O'Neil W.	IIIa	Lowell, "
Mason, Herbert	IIb	Lawrence, "
Massicotte, Armend J.	VIId	Lowell, "
Matthews, George A.	VIa	" "
Matthews, Hugh J.	Ia	" "
Matthews, Robert J.	VIa-VIc	" "
Mavrides, George	IVa	" "
Mehlhorn, Herbert E.	IIIa	Lawrence, "
Meinelt, Theodore E.	VIIb	" "
Menchion, Thomas D. L.	IIIb	Lowell, "
Merrill, Paul B.	VIa	" "
Messier, Omer J.	VIId	" "
Metzadorr, Walter A.	IVa	" "
Midwood, Harris	VIIb	" "
Mills, Arvin R.	VIId	" "
Mills, Frank F.	IIb	" "
Mimno, Bernard F., Jr.	VIa	North Billerica, "
Miner, Henry V.	VIIb	Lawrence, "
Miner, John J.	VIIb	North Chelmsford, "
Moir, Harry T.	VIIb	" "
		Lowell, "

Name	Course	Address
Moody, Edwin C., Jr.	VIa	Ballardvale, Mass.
Moore, Robert	IIb	North Chelmsford, "
Morgan, Ralph D.	VIa	Methuen, "
Morley, George I.	VIb	Andover, "
Morrill, Arthur L.	VIe	Lowell, "
Morrissey, Leon F.	IIb	" "
Morrison, Norman B.	VIb	Lawrence, "
Morse, Chester L.	VIb	Lowell, "
Moss, Joseph	VIe	" "
Moylan, James E.	VIIa	" "
Moynahan, Andrew J.	VIId	" "
Murch, Harold E.	IIIa	North Andover, "
Murphy, Francis L.	IVa	" "
Murphy, Harry J.	VIb	Andover, "
Murphy, John J.	VIa	Lawrence, "
Murphy, Joseph P.	VIb	North Andover, "
Murphy, Thomas M.	VIa	Lowell, "
Murray, Francis J.	VIa	" "
Murray, John C.	VIa	" "
Musat, Emile L.	IVa	" "
Myhr, Norman	VIb	" "
Mylott, James J.	VIa	North Andover, "
Naden, William	IVa	" "
Nagle, Timothy	VIb	Lowell, "
Nanes, Henry	VIb	" "
Nath, Simon	IVb	North Chelmsford, "
Nathan, Edgar A.	IIIa	Lowell, "
Neild, Charles T., Jr.	VIId	" "
Nelson, Albin H.	VIb	West Chelmsford, "
Newhall, Russell D.	IVa	Lawrence, "
Nichols, Clarence B.	VIId	Dracut, "
Nugent, Charles M.	Vb	Lowell, "
Nystrom, Herbert W.	VIb	West Chelmsford, "
O'Connor, George A.	VIe	Lowell, "
O'Connor, Joseph W.	VIb	" "
O'Hara, James	VIb	Westford, "
O'Leary, Arthur F.	VIa	Lowell, "
Oliver, John W.	IIIa	" "
O'Loughlin, John B.	Vb	" "
O'Malley, John J.	VIa	" "
O'Neil, Charles F.	VIb	" "
Orr, Andrew S.	VIe	" "
Ortel, Charles	VIb	" "
Ouellette, Armand J.	Ia	" "
Page, Harold A.	VIb	North Andover, "
Palm, Henry W.	VIa	Lowell, "
Palmer, William H.	VIId	" "
Pappas, Costas V.	VIa	" "
Pappas, Evangelos	Vb	" "
Paquette, Alice C.	IIIb	" "
Paquette, Yvonne E.	IIIb	" "
Parker, Charles L.	IVc	Lawrence, "
Parkhurst, George E.	IVc	" "
Partington, Fred, Jr.	Va	Lowell, "
Payton, Milo D.	VIId	" "
Pearson, Paul E.	VIb	" "
Pease, Pearl E.	VIa	Wamesit, "

Name	Course	Address
Peirce, Clarence A.	Ia	Lowell, Mass.
Perry, Thomas F.	VIb	" "
Petzold, Robert H.	IIb	Lawrence, "
Phillip, Alma S.	IIIa	Methuen, "
Photis, Christos J.	IVa	Lowell, "
Piazza, Salvatore J.	VIa	Lawrence, "
Pihl, Arthur E.	VIb	Lowell, "
Pihl, August A. E.	VIb	" "
Place, Christopher J.	VIb	" "
Playdon, Leon H.	VIa	Methuen, "
Plunkett, Francis D.	VIb	Lowell, "
Pollard, James W.	VIa	" "
Popovich, Michael L.	VIa	" "
Porter, Ralph	VIb	" "
Preston, William E.	IIb	" "
Pronovost, John E.	VIa	" "
Quinn, John J.	VIb	" "
Rafferty, John J.	VIb	Forge Village, "
Ramsbotham, Ernest	IVa	Lawrence, "
Ramos, Manuel S.	VIa	Lowell, "
Raney, Walter A.	VIe	" "
Ray, Delbert E.	IVa	" "
Raymond, Philip A.	IIb	" "
Ready, James J.	VIa	" "
Reeves, Albert W.	VIa	Graniteville, "
Reynolds, Michael J.	VIIa	Lowell, "
Reynolds, Thomas F.	VIa	" "
Richard, Ernest W.	VIa	" "
Riddell, Albert	IIIa	Lawrence, "
Riley, Leo R.	Va	Lowell, "
Riordan, William J.	VIb	" "
Ritchie, Peter	IVa	North Andover, "
Rivers, Elsie M.	IIIb	Lowell, "
Robert, Arthur D.	IIIb	" "
Rodger, Charles E.	IVa	" "
Rodger, Harry A.	IIb	Andover, "
Rodgers, Harold	IVa	Lawrence, "
Ronan, William J.	IVa	Lowell, "
Rose, Ellsworth F.	VIa	Forge Village, "
Rosendale, Yngve	VIb	Lowell, "
Ross, Alexander H. L.	VIb	" "
Rousseau, Joseph E.	Va	" "
Rousseau, Wilfred J.	VIb	" "
Russell, Howard P.	IVa	Lawrence, "
Russon, Albert E.	IIb	Tyngsboro, "
Ryan, Harry	VIa	Lowell, "
Ryan, John V.	VIb	Tewksbury, "
Ryan, William J.	VIa	Lowell, "
Sainis, Stephanos S.	IVa	" "
St. Hilaire, Joseph A.	VIa	" "
St. Jean, Leo L.	VIb	" "
St. Onge, Alexandre	IIIb	" "
Saulnier, Francis M.	VIb	Lawrence, "
Saunders, Albert L.	VIa	North Andover, "
Savage, Effie M.	IIIb	Lowell, "
Savard, Villemond E.	VIa	" "
Sawyer, Harold A.	IIb	Methuen, "

Name	Course	Address
Schofield, Charles L.	VIa	Lowell, Mass.
Scott, Joseph A.	IVa	Methuen, "
Scrags, William R.	VIa	Lowell, "
Seymour, John S.	VIc	" "
Shanks, Alexander M.	Vb	" "
Shaughnessy, John J.	VIIIb	" "
Shaw, William	VIe	" "
Shea, Edward P.	VIa	" "
Shinkwin, Charles P.	IVa-VIe	" "
Shorten, Herbert E.	VIa	Andover, "
Silcox, Thomas S.	Ia	Lowell, "
Silk, Adam	VIa	" "
Silk, Percy B. S.	VIc	" "
Sims, Horace G.	VIc	" "
Slater, Bert	VIc	Methuen, "
Smith, Joseph	VIa	Lowell, "
Smith, Joseph P.	IIIa	" "
Smith, Raymond	VIa	" "
Spillane, James F.	VIb	" "
Sprague, Harry R.	IVa	" "
Stephens, Harold W.	VIa	" "
Stephens, Paul S.	VIa	" "
Stewart, George	VIIa	" "
Stewart, Irving H.	VIb	" "
Stone, Edward	Vb	" "
Strazdas, Peter	IIIa	Lawrence, "
Sullivan, Arthur J.	VIc	Lowell, "
Sullivan, Edward B.	Va	" "
Sullivan, Edward T.	VIb	North Andover, "
Sullivan, Frederick L.	IIIb	Lowell, "
Sullivan, Stephen J.	VIa	" "
Swain, Clifton F.	IIIa	Methuen, "
Sykes, William W.	VIIb	Lowell, "
Sylvester, Harry L.	VIc	" "
Taffe, Christopher D.	VIa	" "
Tait, Robert J.	IVa	Lawrence, "
Talbot, Joseph	IVb	" "
Tallard, Albert	VIb	Lowell, "
Taylor, Justin A.	VIc	" "
Tessier, Alderic L.	VIa	" "
Thellen, Leo J.	Ia	" "
Thibeault, Arthur	VIb	" "
Thibodeau, Camille L.	IIIb	" "
Thibodeau, Joseph O.	VIc	" "
Thompson, Arthur J.	VIa	" "
Thomson, Walter A.	VIb	Lawrence, "
Tivnan, Edward J.	VIb	Lowell, "
Trenholm, Arthur	VIb	" "
Turner, Florence E.	IIIb	" "
Tyrrell, David L.	IIIa	" "
Underwood, Harold J.	VIa	" "
Vaillancourt, Arthur L.	VIc	" "
Vaillancourt, Joseph A.	Vb	" "
Vaughan, Sewall D.	VIb	" "
Veiga, Dominick	VIa	" "
Voisard, Louis J.	IIIb	" "
Walker, Arthur	VIIb	" "

Name	Course	Address
Walker, Harry L.	Ia	Lowell, Mass.
Walker, William	Vb	" "
Wallace, Alexander	Va	" "
Walsh, George T	IIIb	" "
Walton, Donald S.	Vib	" "
Warburton, William H.	Vb	" "
Weber, Joseph L.	VIa	" "
Welcome, Harold A.	VId	" "
Wells, Leland A.	VIa	" "
Westwell, Herbert R.	IIb	Methuen, "
Whalen, Richard S.	VIa	Lowell, "
Whatmough, Harry	Vib	" "
Wheeler, Harry L.	IIIa	" "
White, Joseph F.	VIa	" "
White, Leo J.	VIa	" "
Whitefield, Donald A.	IIIa	Lawrence, "
Whitehead, Ralph H.	IIIa	Lowell, "
Whiteoak, Percy	Vb	" "
Witham, Alfred	Vib	" "
Whithed, Nelson R.	IIa	" "
Whitley, Arthur M.	IIIa	North Chelmsford, "
Whitney, Alfred W.	Vib	Lowell, "
Whittier, Arthur P.	IIIa-VIe	" "
Wieland, Herbert E.	IVa	Lawrence, "
Wilkinson, Raymond E.	IVa	North Andover, "
William, Richard E.	Ia	Boston, "
Williams, Sumner H.	VId	Lowell, "
Winn, Roland E.	IIb	Methuen, "
Witherell, Archie M.	VId	Lowell, "
Woessner, Ernest F.	Vib	" "
Wojtowicz, Walter	VIa	" "
Woodman, Harry L.	VId	" "
Worssam, Francis H.	VIe	" "
Worth, Arthur	Vib	" "
Wright, Leonard	Vib	" "
Wylde, Paul L.	IIb	Lawrence, "
Wylie, Archie	VIa	Lowell, "
Wylie, Raymond L.	IVa	" "
Yeomans, Herbert D.	Vb	" "
Young, Carl H.	IIIa	Nashua, N. H.

SUMMARY

Day Students.....	122
Evening Students	761
Total.....	883
Names counted twice.....	9
Net Total.....	874

ALPHABETICAL LIST OF GRADUATES

Name	Course	Class	Day or Evening
*Abbott, Arthur G.	Vb	1913	E
Abbott, Edward M.	II	1904	D
Abbott, George R.	II	1908	D
Abbott, Paul W.	Ia	1906	E
Ackroyd, Theodore C.	IIb	1907	E
Adams, Floyd W.	VI	1916	D
Adams, Henry S.	IIa	1903	E
Adams, Henry S.	I	1905	D
Adams, Michael E.	VI	1904	E
Adams, Tracy A.	IV	1911	D
Adams, William R.	IIa	1902	E
Albrecht, Charles H.	IV	1917	D
Alexander, Mrs. James	IIIB	1915	E
Allen, William J.	IVa	1913	E
Allen, William J.	IVb	1917	E
Alter, Frederick A.	IVa	1914	E
Amiot, Louis H.	Va	1906	E
Anderson, Carl A.	IV	1909	E
Anderton, Harry	Va	1910	E
Anderton, Harry	Vb	1913	E
Andrews, Oliver	Ia-Va	1911	E
Arienti, Peter J.	IV	1910	D
Armitage, Ernest	Vb	1915	E
Armstrong, Elias B.	IIb	1906	E
Arnold, Warren H.	VII	1908	E
Arnold, Warren H.	IIIIa	1909	E
Arundale, Henry B.	II	1907	D
Aspinall, William	IIb	1901	E
Atkinson, Henry	IIIIa	1915	E
Atkinson, Norman	Vb	1910	E
Atkinson, Reginald C.	IVa	1913	E
Atkinson, Reginald C.	IVb	1917	E
*Avery, Charles H.	II	1906	D
Axon, Charles M.	Vb	1917	E
Bailey, Carl E.	Ia	1910	E
Bailey, Joseph W.	I	1899	D
Bailey, Rothwell	Va	1909	E
Bailey, Walter J.	IV	1911	D
Bain, William A.	VII	1907	E
Bake, Herbert	IIIIa	1905	E
Bake, Herbert	P. G. IIIa	1906	E
Bake, Herbert	VII	1907	E
Bake, Herbert	P. G. IIIa	1909	E
Baker, William J.	IV	1916	D
Bakewell, Albert	Vb	1914	E
Baldwin, Arthur L.	IV	1900	D
Baldwin, Frederick A.	II	1904	D
Ballard, Horace W. C. S.	IV	1908	D
Ballinger, Frederick W.	IIb	1907	E
Ballinger, Raymond F.	VIb	1915	E
Ballinger, William E.	IIb	1911	E
Balmforth, James H.	IIa	1903	E
Balmforth, James H.	IIa-b	1904	E

*Deceased

Name	Course	Class	Day or Evening
Balmforth, William F.	VI	1904	E
Balmforth, Martha (See French, Mrs. Irving)			
Bamford, John T.	IIIa	1917	E
Banks, Jonas	Va	1909	E
Banks, Jonas	Vc	1910	E
*Barber, James E.	IIb	1907	E
Barker, John P.	V	1904	E
Barlofsky, Archie	VI	1917	D
Barlow, Robert	V	1902	E
Barnes, Hammond	Ia - Va	1914	E
Barnes, Hammond	IIIa	1916	E
Barnes, Joseph	Ia	1911	E
Barr, Mrs. John E.	IIIb	1909	E
Barr, I. Walwin	I	1900	D
Barraclough, John C.	Ia	1907	E
Barrington, James L.	IV	1908	E
Barrington, John A.	IV	1904	E
Barrows, Ariston K.	Va	1915	E
Barrows, Ariston K.	Ia	1917	E
Barry, Alma M.	IIIb	1917	E
Barry, Edward J.	IIIa	1903	E
Bassett, Cyrus J.	Vb	1913	E
Bastow, Henry	IIIa	1903	E
Bastow, Henry	V	1905	E
Bastow, Percy	IVa	1911	E
Bastow, Stephen W.	IV	1907	E
Baxter, Alvah J.	IIa	1903	E
Baxter, Walter	Vb	1916	E
Bayard, Pierre P.	IIIa	1907	E
Bean, Winthrop S.	IVa	1916	E
Beaulieu, William E.	IIb	1913	E
Beech, Wilfred	Ia	1912	E
Begen, Thomas W.	IIb	1907	E
Begen, Thomas W.	IIb	1908	E
Bell, Charles W.	VIa	1913	E
Bell, Frederick W.	IIa	1905	E
Bennett, Edward H.	V	1903	D
Bennett, Herbert B.	II	1913	D
Benoit, Benjamin L.	VIb	1909	E
Benoit, William A.	Va	1907	E
Benson, George E.	Ia	1916	E
Bernard, Joseph E.	VIa	1912	E
Berry, Alfred H.	VI	1908	E
*Berry, Frank M.	IIIa	1899	E
*Berry, Frank M.	V	1901	E
Berry, Percy W.	Vb	1910	E
Berry, Wilbur F.	II	1917	D
Bigelow, Prescott F.	II	1912	D
Billings, Rupert F.	IVa	1916	E
Binns, Heaton	II-V	1899	E
Binns, Heaton	VI	1902	E
Birdsall, James E.	IIb	1915	E
Birdsall, James E.	Vb	1916	E
Birkby, Charles H.	IVa	1911	E
Bixby, Edward E.	IIIa	1914	E
Black, Alexander S.	Vb	1913	E

*Deceased

Name	Course	Class	Day or Evening
Blaikie, Howard M.	II	1911	D
Blais, Emile	VI d	1912	E
Blake, Parker G.	VI	1914	D
Blanchette, Eugene	III b	1912	E
Bloom, Wilfred N.	IV	1903	D
Bodwell, Henry A.	II	1900	D
Bohne, Frederick C.	V b	1917	E
Boije, Walter F.	II b-VII	1912	E
Bonney, Nathaniel H.	IV a	1915	E
Booth, Arthur	III a	1909	E
Bordeleau, Georges A.	II b	1915	E
Bordeleau, Georges A.	IV a	1916	E
Bottomley, Wilfred	VI a	1917	E
Boucher, John L.	VI	1904	E
Bouille, Arthur L.	V b	1907	E
Bourchard, Ethan J.	V c	1910	E
Bourchard, Robert R.	V b	1910	E
Bowen, Herbert E.	III a	1909	E
Bowie, Samuel A.	VI	1905	E
Bowles, Willis H.	V a	1916	E
Bowring, George P. B.	VI	1902	E
Boyd, George A.	I	1905	D
Boyle, John E.	V a	1914	E
Bradford, Roy H.	II	1906	D
Bradley, Raymond F.	VI	1914	D
Bradley, Richard H.	V	1901	D
Brainerd, Albert C.	I a	1912	E
Brainerd, Arthur T.	IV	1909	D
Brainerd, Harry C.	I a	1912	E
*Brainerd, Irving L.	I a	1902	E
Bramley, Charles	V a	1912	E
Branch, Guy E.	II b	1915	E
Branch, Guy E.	V b	1916	E
Branch, Guy E.	VII	1917	E
Brandy, William F.	IV a	1914	E
Brandy, William F.	II a	1915	E
Brandy, William F.	II b-IV b	1917	E
Brannen, Leon V.	III-V	1907	D
Brannen, Leon V.	II a	1907	E
Breen, James D.	V c	1913	E
Breen, John P.	V b	1913	E
Brickett, Chauncey J.	II	1900	D
Brickett, Raymond C.	II	1914	D
Broadbent, James H.	V b	1908	E
Broadbent, James T.	I a	1899	E
Broadbent, William	V b	1908	E
Broderick, Thomas H.	VII	1912	E
Brooks, Noah	III a-V	1901	E
Brouder, John J.	III a	1906	E
Brouder, John J.	VII	1907	E
Brown, James H.	VI a	1914	E
Brown, James H.	VI d	1916	E
Brown, James P.	III a	1905	E
Brown, James P.	P. G. III a	1906	E
Brown, James T.	III a	1908	E

*Deceased

Name	Course	Class	Day or Evening
Brown, Leon E.	VIa	1914	E
Brown, Rollins G.	IV	1912	D
Brown, William F.	VIb	1911	E
Brown, William G.	IIb	1906	E
Browne, Charles D.	Ia	1912	E
Bruce, William	VII	1917	E
Bryant, Ernest L.	VI	1905	E
Bryden, Frederick A., Jr.	IVa	1916	E
Buchan, Donald C.	II	1901	D
Buckley, Harry	IV	1908	E
Buckley, Richard A.	Vb	1909	E
Bucklitsch, Gustave J.	IIb	1907	E
Bunce, Raymond H.	Vb	1909	E
Burgess, Joseph H.	Va	1906	E
Burgess, Joseph H.	Vb	1907	E
Burgess, Joseph H.	IIIa	1910	E
Burghardt, Edward S.	IIa	1902	E
Burghardt, Paul C.	IIa	1901	E
Burke, George J.	VII	1912	E
Burke, James F.	Vc	1911	E
Burke, John J.	IVa	1916	E
Burke, Thomas F.	Ia	1905	E
Burnham, Frank E.	IV	1902	D
Burnham, Joseph W.	IIIa	1906	E
Burnham, Wilmont V.	Vb	1906	E
Burns, Edward J.	IV	1905	E
Burns, James E.	IV	1905	E
Burns, Richard L.	VIb	1914	E
Burns, Robert H.	Ia	1916	E
*Burrage, Katherine C.	IIIb	1899	D
*Burrage, Katherine C.	P. G. IIIb	1900	D
Butland, Ralph A.	VII	1913	E
Butland, Ralph A.	IIb	1915	E
Butler, Benjamin O.	VI	1904	E
Butler, Elizabeth M. (See Barr, Mrs. John E.)			
Butterworth, Charles A.	Va	1907	E
Butterworth, John A.	IIb	1907	E
Buzzell, Fred S.	IIIa	1912	E
Buzzell, Fred S.	VII	1913	E
Buzzell, William O.	IIIa	1901	E
Buzzell, William O.	P. G. IIIa	1902	E
Byam, Walter S.	VI	1903	E
Bzoski, John	Vb	1916	E
Cady, Dennis J.	V	1903	E
Caldwell, James	VId	1915	E
Callahan, Patrick A.	VI	1904	E
Cameron, Elliott F.	IV	1911	D
Campbell, Albert D.	IIb	1900	E
Campbell, Archibald	IV	1908	E
Campbell, Charles F. P.	IIIb	1915	E
Campbell, Edward G.	VIc	1910	E
*Campbell, Laura E.	IIIb	1900	D
Campbell, Louise P.	IIIb	1903	D
Campbell, Orison S.	II	1903	D
Campbell, Thomas J.	IIIb	1916	E

*Deceased

Name	Course	Class	Day or Evening
Campling, Frank	IIb	1914	E
*Carden, Francis E.	IIb	1907	E
*Carden, Francis E.	IIb	1908	E
Carlson, Ernest B.	IIb	1907	E
Carlson, Goddard O.	VII	1912	E
Carman, William	Va	1909	E
Carney, William J.	Ia	1908	E
Caron, Cleophas	Ia	1905	E
Carpilio, John A.	VIa	1911	E
Carr, George E.	I	1905	D
Carter, Charles R.	Vb	1908	E
Carter, Robert A.	IV	1902	D
Carty, Thomas P.	Vb	1911	E
Cary, Julian C.	VI	1910	D
Casavant, Elphege H.	VIId	1915	E
Cawthra, Albert B.	IIb	1900	E
Chadwick, Laurie	Vb	1915	E
Chamberlin, Frederick E.	I	1903	D
Chandler, Proctor R.	IV	1911	D
Charbonneau, Marie A.	IIIb	1916	E
Charleton, Peter	VIa	1913	E
Cheetham, James A.	VIa	1916	E
Cheetham, John James	IIIa	1901	E
Cheetham, John James	P. G. IIIa	1902	E
Cheetham, John Joseph	Ia	1904	E
Cheney, Raymond S.	VIa	1917	E
Chesworth, Frank K.	Va	1909	E
Chicken, Harold M.	Ia	1916	E
Chippindale, Ernest W.	IIb	1901	E
Chisholm, Lester B.	I	1911	D
Christenson, John O.	VIb	1912	E
Christison, Hugh	IV	1910	E
Christison, Hugh	IVd	1911	E
Church, Charles R.	II-V	1906	D
Churchill, Charles W.	III	1906	D
Clapp, F. Austin	II	1904	D
Clark, John H.	IVa	1914	E
Clark, John W.	IVa	1912	E
Clark, Thomas T.	II	1910	D
Clarke, Wesley J.	VIId	1913	E
Classon, Walter H.	Vc	1913	E
Cleary, Charles J.	II	1913	D
Clogston, Raymond B.	IV	1904	D
Clough, Herschel G.	IVa	1916	E
Coan, Charles B.	IV	1912	D
Coburn, Elmer R.	IVa	1916	E
Cochrane, John	VIb	1911	E
Cochrane, John	IVa	1915	E
Cochrane, William D.	IVa	1914	E
Cockell, Frederick H.	IIIa	1909	E
Colby, Arthur D.	Ia	1900	E
Colby, James T.	VI	1916	D
Cole, Edward E.	IV	1906	D
Cole, James T.	II	1905	D
Collier, John	IIIa	1899	E
Collier, John	P. G. IIIa	1902	E
Collins, Frank	VIa	1914	E

Name	Course	Class	Day or Evening
Collins, John A.	IIa-b	1905	E
Coman, James G.	I	1907	D
Conant, Harold W.	I	1909	D
Conant, Richard G.	I	1912	D
Conklin, Jennie G.	IIIb	1905	D
Conley, Frederick A.	VI	1904	E
Conley, Leander F.	IVa	1916	E
Connors, Edward F.	VI	1904	E
Cook, Cheney E.	IIIa	1905	E
Cook, Kenneth B.	I	1913	D
Coolens, Julvin J.	IIIa	1917	E
Coolens, Leon G.	Vb	1916	E
Coolens, Leon G.	Va	1917	E
Cooper, George H.	Ia	1914	E
Corkery, Raymond F.	Va	1917	E
Corr, Eben W.	Vb	1908	E
Corr, James F.	Vb	1908	E
Cosendai, Edwin F. E.	IV	1915	D
Cote, Fred J.	VIa	1913	E
Cote, George W.	VIb	1911	E
Cowdell, Herbert	V	1901	E
Cowdrey, Charles E.	V	1902	E
Cowdrey, Charles E.	Vb	1909	E
Cox, Edward J.	IIIa	1910	E
Cox, Edward J.	Va	1911	E
Cox, Edward J.	Ia	1914	E
Cox, Edward J.	Vc	1915	E
Craig, Albert W.	IV	1907	D
Craig, Clarence E.	III	1902	D
Craven, Harry	VII	1908	E
Creese, Guy T.	IV	1914	D
Cremin, Daniel J.	Ia	1902	E
Crompton, George E.	IVa	1916	E
Crompton, Henry H.	II	1899	E
Cudmore, Edward T.	VIa	1913	E
Culver, Ralph F.	IV	1904	D
Cummings, Edward S.	VI	1916	D
Curran, Charles E.	II-III-V	1902	D
Currier, Herbert A.	I	1906	D
Currier, John A.	II	1901	D
Curtis, Frank M.	I	1906	D
Curtis, William L.	II	1905	D
Cushing, Lester H.	Ia	1913	E
Custer, James J. E.	V	1905	E
Cutler, Benjamin W., Jr.	III	1904	D
Cutress, Albert J.	VIa	1910	E
Cuttle, James H.	II	1899	D
Dalton, Gregory S.	IV	1912	D
Dana, Clarence A.	VI	1905	E
Daskalakis, Efthimios Z.	Vb	1912	E
Daskalakis, Efthimios Z.	Vc	1913	E
Davieau, Alfred E.	VI	1916	D
Davieau, Arthur N.	VI	1913	D
Davis, Alexander D.	VI	1914	D
*Davis, Henry	IIb	1901	E
Davis, Prentice T.	Ia	1904	E

*Deceased

Name	Course	Class	Day or Evening
Davison, Frank L.	Vb	1909	E
Dawson, Walter F.	IVa	1917	E
Dean, Arthur	VII	1917	E
Dean, Hubert R.	VIb	1911	E
Dearborn, Roy	VI	1913	D
Dearth, Elmer E.	IV	1912	D
Deely, John A.	Vb	1910	E
Delaney, Michael J.	Vb	1911	E
Delderfield, John W.	VId	1914	E
Deleu, Arthur	Vb	1917	E
Delmage, Edward R.	IIIa	1904	E
Dempsey, John W.	IIa	1904	E
Desaillier, Adolphe	VId	1916	E
DeSpencer, John	VIb	1917	E
Devine, Mary F.	IVa	1913	E
Dewey, James F.	II	1904	D
Dewey, Maurice W.	II	1911	D
Dick, Henry K.	Ia	1912	E
Dick, Hugo P.	IIIa	1905	E
Dick, Hugo P.	P. G. IIIa	1906	E
Dick, Hugo P.	IIb	1907	E
Dick, Hugo P.	Vb	1908	E
Dickson, Andrew	IIa	1906	E
Dillon, James H.	III	1905	D
*Dimlick, Benjamin C.	IIIa	1905	E
*Dimlick, Benjamin C.	P. G. IIIa	1906	E
*Dittman, Ralph A.	IIIa	1912	E
Dixon, Arthur	IIIa	1908	E
Dobbs, William	IIb	1907	E
Dobbs, William	IIb	1908	E
Dodge, Charles P.	IIa	1907	E
Dodge, Ernest W.	Vb	1911	E
Dodge, Frank	Ia	1906	E
*Dollbaum, John A.	IIIa	1912	E
Donahay, William H.	Vb	1912	E
Donahue, Michael F.	VI	1904	E
Donahue, William E.	VIb	1914	E
Donald, Albert E.	II	1904	D
Donnellan, Frank T.	IIa	1902	E
Donnellan, Frank T.	V	1903	E
*Donnelly, James	Ia	1900	E
Donovan, Daniel F.	IIa	1901	E
Doole, George L.	VI	1904	E
Dooley, Edward W.	VI	1904	E
Dorr, Clinton L.	VI	1914	D
Dowd, Martin F.	IIIa	1914	E
Downs, John F.	VId	1911	E
Doyle, John B.	VId	1913	E
Drescher, George J.	Vb	1917	E
Dubois, Ubald E.	VIb	1915	E
Duce, Benjamin	IIIa	1906	E
Duce, Benjamin	VII	1907	E
Duckett, Fred I.	Vb	1910	E
Dudley, George E.	Ia	1902	E
Duggan, Francis P.	VI	1904	E

*Deceased

Name	Course	Class	Day or Evening
Dulligan, Charles E.	VIa	1909	E
Dulligan, Charles E.	IVa	1912	E
Dulligan, Lawrence F.	VIa	1910	E
Dulligan, Thomas	VIa	1911	E
Dunn, George C.	IIIa	1908	E
Dunn, George C.	IVa	1910	E
Dunn, George C.	IVb	1913	E
Dunning, Carlos W.	VIIb	1909	E
Durgin, Edward F.	VIa	1917	E
Duval, Joseph E.	II	1910	D
Dwight, John F., Jr.	II	1908	D
Early, William E.	VIIb	1915	E
Echmalian, John G.	VI	1916	D
Egan, Charles H.	IVa	1912	E
Egan, John W.	VIIb-VIIId	1915	E
Ehrenfried, Jacob B.	II-V	1907	D
Eichhorn, Paul A.	VIa	1915	E
Ekengren, Hilding C.	IIIb	1913	E
Eklund, Louis V.	Vb	1910	E
Elliot, Gordon B.	II	1912	D
Ellis, George W.	VII	1906	E
Elston, Fred R.	IIIa	1900	E
Emerson, Frank W.	II	1903	D
Emmons, Harry I.	IVa	1914	E
Engstrom, Karl E.	VI	1912	D
Erbe, Gustave	VI	1905	E
Evans, Alfred W.	III	1903	D
Evans, William R.	III	1903	D
Evison, William A.	V	1901	E
Ewer, Nathaniel T.	IV	1901	D
Eyers, John T.	IV	1906	E
Fairbanks, Almonte H.	II	1909	D
Faneuf, George J.	VIIb	1915	E
Farmer, Chester J.	IV	1907	D
Farnsworth, Harold V.	VI	1916	D
Farr, Leonard S.	II	1908	D
Farrell, Thomas	IIa	1901	E
Fels, August B.	II	1899	D
Ferguson, Arthur F.	I	1903	D
Ferguson, Thomas	V	1902	E
Ferguson, William G.	III	1909	D
Fernley, Bert D.	VIIb-VIIId	1915	E
Field, Charles W.	VI	1902	E
Fielding, Fred	Vc	1910	E
Finlay, Harry F.	IV	1910	D
Fisher, Russell T.	VI	1914	D
Fiske, Starr H.	II	1909	D
Flaherty, William	Vb	1911	E
Flathers, George J.	IVa	1916	E
Fleming, Carl S.	Ia	1917	E
Fleming, Frank E.	IV	1906	D
Flemings, Lester A.	Va	1910	E
Flemings, Lester A.	Ia	1915	E
Fletcher, Roland H.	VI	1910	D
Flint, Leon G.	IIIa	1907	E
Flynn, John	VIIId	1910	E
Flynn, John J.	VI	1903	E

Name	Course	Class	Day or Evening
*Flynn, Patrick	Vb	1910	E
Flynn, Thomas P.	IV	1911	D
Flynn, William J.	Vb	1908	E
Fontaine, George E.	VId	1916	E
Ford, Edgar R.	IV	1911	D
Ford, Joseph L.	IIIa	1915	E
Forrest, Fred G.	IIa	1902	E
Forrest, William R.	VId	1913	E
Forsaith, Ralph A.	VI	1916	D
Fortier, Alderic W.	Va	1917	E
Fortune, David A.	IIb	1902	E
Foster, Boutwell H.	VI	1917	D
Foster, Clifford E.	II	1901	D
Foster, Sherwood L.	Ia	1905	E
Fournier, Albert A.	Ia	1911	E
Frame, William	V	1901	E
Frank, Emil M.	IIIa	1904	E
Frank, Emil M.	P. G. IIIa	1906	E
Frechette, Alphonse J.	IIb	1907	E
Freeman, George D.	VId	1913	E
Freeman, Ralph W.	IVa	1912	E
Freeman, Ralph W.	IVb	1914	E
French, Ernest J.	Ia	1905	E
French, George W., Jr.	IIIa	1915	E
French, Mrs. Irving	IIIa	1903	E
French Raymond C	Vb	1917	E
French, Walter B.	VId	1916	E
Fritz, Carl C.	VII	1917	E
Frost, Harold B.	II	1912	D
Frothingham, Newton S.	Ia	1912	E
*Fujiyoshi, Heisayu	Ia	1910	E
*Fujiyoshi, Heisayu	Va	1911	E
Fuller, Allen R.	IV	1917	D
Fuller, Edwin M.	Ia	1915	E
Fuller, George	I	1903	D
Fulton, John McC.	V	1906	E
Funnell, James C.	Va	1917	E
Gadsby, Arthur N.	II	1913	D
Gagan, John H.	V	1901	E
Gagnon, Arthur C.	VId	1915	E
Gahm, George L.	II	1906	D
Gainey, Francis W.	IV	1911	D
Gakidis, Alexander N.	IVa	1911	E
Gale, Harry L.	III	1910	D
Gallagher, Edward J.	Va	1916	E
Galle, Carl W.	VId	1916	E
Garner, William	IIIa	1903	E
Garrity, Joseph F.	VId	1911	E
Garrity, Peter F.	Va	1915	E
Gaspar, Edith E.	IIIb	1910	E
Gaudette, Eugene O.	VId	1916	E
Gaulin, Achille G.	VId	1916	E
Gaunt, Alfred C.	IIIa	1899	E
Gaunt, Alfred C.	P. G. IIIa	1902	E
Gaunt, Alfred C.	IIa	1903	E

*Deceased

Name	Course	Class	Day or Evening
Gaunt, Alfred C.	I Ib	1904	E
Gaunt, Ernest H.	IIIa	1909	E
*Gauthier, William	Vb	1910	E
Gay, Earle B.	Ia	1905	E
Gay, Olin D.	II	1908	D
Geaney, James H.	VII	1915	E
Gearin, John W.	VIb	1915	E
Gerrish, Henry K.	III	1916	D
Gerrish, Walter	III	1903	D
Gerry, Churchill	VIa	1915	E
Gerry, Churchill	IVa	1916	E
Gesing, Roland M.	VII	1916	E
Gibbons, James J.	VIa	1914	E
Giffin, Charles H.	IIIa	1913	E
Giffin, Charles H.	VII	1914	E
Giffin, George R.	IIIa	1913	E
Giffin, George R.	VII	1914	E
Gile, Harold E.	IVa	1913	E
Gile, Harold E.	IVb	1916	E
Gilinson, Philip J.	VIa	1909	E
Gill, Gardner G.	IVa	1914	E
Gilley, Frederic S.	IIIa	1916	E
Gilley, Frederic S.	I Ib	1917	E
Gillispie, James E.	VII	1907	E
Gillon, Sarah A.	IIIb	1906	D
Gilman, Edward T.	VIa	1914	E
Glennon, Edward M.	IVa	1911	E
Goddard, Harold W.	VIb	1915	E
Goddard, Walter L.	VII	1915	E
Goldberg, George	VI	1910	D
Good, Henry	Ia	1902	E
Goodchild, George	Ia	1903	E
Goodchild, George	VI	1905	E
Goodhue, Amy H. (See Harrison, Mrs. Arthur)			
Goodwin, Ross	Vb	1911	E
Gookin, Alice L. (See Murphy, Mrs.)			
Gordon, Herbert E.	IIIa	1909	E
Gordon, Loyd H.	VIa	1913	E
Grant, Archibald	I Ib	1901	E
Graves, John F.	VIb	1912	E
Gray, Finley M.	VI	1903	E
Greenhalge, James	Vc	1908	E
Greenwood, Ralph F.	VII	1912	E
Gregson, Robert B.	Va	1906	E
Gregson, Robert B.	Ia-Vc	1907	E
Grimes, Henry D.	IVa	1917	E
Grouke, Michael	I Ib	1901	E
Guenard, Julia A.	IIIb	1916	E
Gunning, Alfred J.	VII	1916	E
Gunther, George A.	IVa	1916	E
Gustafson, Alfred L.	IVa	1911	E
Gustafson, Alfred L.	VIa	1915	E
Gyzander, Arne K.	IV	1909	D
Haartz, John C.	VII	1907	E
Haas, Ignatius	Ia	1907	E
Hadley, Walter E.	IV	1908	D

*Deceased

Name	Course	Class	Day or Evening
Haigh, Walter	IIIa	1902	E
Haigh, William	Vb	1906	E
Haithwaite, Albert	Ia	1914	E
Haithwaite, George Q. R.	Va	1916	E
Haldane, Andrew	Va	1914	E
*Hale, Frank O.	Ia	1915	E
Hall, Richard G.	Ia	1915	E
Hall, Sydney H.	VIIb	1914	E
Hall, William H., Jr.	IIIa	1917	E
Hallbauer, William R.	Vb	1908	E
Halloran, Joseph M.	IVa	1915	E
Halsell, Elam R.	I-V	1904	D
Hamblett, Harry A.	Ia	1907	E
Hammond, John N.	Vb	1914	E
Handley, John M.	Vb	1911	E
Hanglin, Albert J.	IV	1907	E
Hanglin, William E.	Vb	1907	E
Hanley, Edward T.	IIb	1915	E
Hannagan, Edward F.	IIb	1913	E
Hannagan, Edward F.	VII	1914	E
Hansen, Hans M.	VID	1912	E
Hanslip, Charles W.	Vb	1911	E
Hanson, Edward	IIIa	1908	E
Hanson, Edward	P. G. IIIa	1909	E
Hanson, Edward	Ia	1913	E
Hanson, Winfield S.	IVa	1914	E
Harder, Elmer E.	VI	1905	E
Hardman, David B.	IV	1908	E
Hardy, Philip L.	VI	1910	D
Harmon, Charles F.	I	1899	D
Harrington, Thomas	IV	1915	D
Harris, Charles E.	I	1905	D
Harris, George S.	I	1902	D
Harris, Louis	VII	1908	E
Harrison, Mrs. Arthur	IIIb	1900	D
Harrison, Mrs. Arthur	P. G. IIIb	1901	D
Hartshorn, George T.	VII	1912	E
Hartwell, Henry E.	VI	1906	E
Hartwell, Marcus H.	Ia-Va	1911	E
Hartwig, Albert E.	Vb	1914	E
Hashmatian, Harry	IIIb	1915	E
Haskell, Spencer H.	II	1907	D
Haskell, Walter F.	IV	1902	D
Hassett, Paul J.	IV	1912	D
Hathorn, George W.	IV	1907	D
Haven, George W.	IIIa	1905	E
Haworth, Joseph	VI	1902	E
Hay, Ernest C.	II	1911	D
Hayes, Michael C.	IIa	1909	E
Hayward, Harry J.	Ia	1917	E
Healy, Andrew J.	VID	1915	E
*Heaton, Forster G.	IV	1911	E
Hebert, Charles L. J.	IV	1907	E
Heeley, George E.	Va	1916	E
Hempel, Frank	V	1904	E
Henderson, George R.	IVa	1915	E

*Deceased

Name	Course	Class	Day or Evening
Hendricks, Thomas A.	VIb	1916	E
Hendrickson, Walter A.	II	1911	D
Hennessey, Ambrose M.	VII	1908	E
Hennigan, Arthur J.	II	1906	D
Henzie, John J.	IIIa	1914	E
Herbst, Gustav F.	Va	1914	E
Hering, Paul C.	IIIa	1910	E
Herrick, Robert F., Jr.	Ia	1917	E
Herrick, William E.	VII	1911	E
Herron, Alexander T.	Ia	1913	E
Herron, Alexander T.	IVa	1914	E
Herron, Alexander T.	IVb	1917	E
Hibbert, George E.	Va	1910	E
Hibbert, George E.	Vc	1911	E
Hibbert, George E.	Vb	1912	E
Hibbert, George E.	IIIa	1917	E
Higginbottom, Harold J.	IVa	1915	E
Higginbottom, Joseph J.	VIa	1916	E
Higgins, Alfred	IIIa	1913	E
Higgins, James A.	IIa	1903	E
Higgins, James A.	IIa-b	1904	E
Higginson, Joseph H.	IIIa	1912	E
Hildreth, Harold W.	II	1907	D
Hill, Bruce	IIIa	1914	E
Hill, Daniel	IIb	1901	E
Hill, Ellsworth O. C.	IIb	1910	E
Hill, Harold	Ia	1908	E
Hill, Harold	Va	1909	E
Hill, Paul	VII	1914	E
Hilliard, William B.	VIa	1910	E
Hillier, Arthur P.	IIb	1909	E
Hintze, Thomas F.	I	1906	D
Hird, Arthur W.	Ia	1910	E
Hird, James A.	IVa	1910	E
Hitchcock, Thomas B.	Ia-IIa-IIIa	1901	E
Hitchen, Harry S.	Vb	1907	E
Hitchen, Thomas G.	Vb	1907	E
Hodge, William	VIa	1911	E
Hodgkins, Albert A.	VII	1909	E
Hodgkins, Albert A.	IIIa	1910	E
Hodgkins, Richard D.	Ia	1916	E
Hoellrich, Martin J.	Vb	1908	E
Hoellrich, Martin J.	Vc	1910	E
Hoelzel, Louis C.	VIa	1913	E
Hoessler, Carl, Jr.	IIIa	1906	E
Hogan, James A.	V	1902	E
Holden, Francis C.	IV	1909	D
Holgate, Benjamin	III	1902	D
Holgate, Benjamin	V	1903	D
Holgate, Charles H.	IIa	1901	E
Holland, Walter F.	IIIa	1912	E
Hollings, James L.	I	1905	D
Holmes, Otis M.	VI	1913	D
Holt, Gavin O.	IVa	1910	E
Holt, Harry C.	VIa	1909	E
Hood, Leslie N.	IV	1912	D

Name	Course	Class	Day or Evening
Hook, Russell W.	IV	1905	D
Horman, Charles P.	IIIa	1914	E
Horsfall, George G.	II-III-V	1904	D
Horton, Chester T.	VI	1914	D
Houston, William I.	IIIa	1909	E
Houston, William I.	Vb	1910	E
Howard, John	V	1900	E
Howard, John	IIIa	1903	E
Howard, John	IIa	1906	E
Howard, John	VII	1907	E
Howard, Thomas	V	1905	E
Howarth, Charles L.	IV	1917	D
Howe, Charles W., Jr.	VId	1914	E
Howe, Woodbury K.	I	1910	D
Howell, Edward A.	Va	1909	E
Howker, John	Ia	1913	E
Howker, John	Va	1914	E
Howker, John	IIIa	1917	E
Hoyle, Edward	IIb	1902	E
Hoyle, Joseph	IIb	1904	E
Hoyt, Charles W. H.	IV	1907	D
Hubbard, Ralph K.	IV	1911	D
Huising, Geronimo H.	I	1908	D
Hunt, Chester L.	III	1905	D
Hunt, Herbert R.	VI	1905	E
Hunter, Ralph	IIIa	1901	E
Hunter, Ralph	V	1903	E
Hunton, John H.	VII	1910	E
Hunton, John H.	II	1911	D
Hunton, Lewis G.	IV	1905	E
Hurtado, Leopoldo, Jr.	Vc	1910	E
Hurtado, Leopoldo, Jr.	VI	1910	D
Huse, Charles H.	Vlb	1914	E
Hutchings, James C.	VII	1912	E
Hutton, Clarence	V	1900	E
Hutton, Clarence	III	1903	D
Hutton, Harold	V	1906	E
Hutton, John M.	Vb	1906	E
Hutton, Thomas V.	Vb	1910	E
Ignatius, Pentti	Va	1907	E
Inberg, Magnus	Ia	1906	E
Ingham, Benjamin W.	Ia	1908	E
Ingle, Ernest	Va	1916	E
Innes, Andrew K.	Vb	1913	E
Innes, Archibald K.	IVa	1917	E
Irvine, James A.	VI	1917	D
Jackson, Charles F.	Vlb	1915	E
Jackson, Frank	Vlb	1910	E
Jackson, Frank	VId	1912	E
Jackson, Walter J.	IIa	1913	E
Jackson, Walter J.	Vb	1914	E
Jackson, Walter J.	IIIa-VII	1915	E
Jarvis, Charles	Vb	1913	E
Jasper, Grant	Vc	1912	E
Jean, Adhemard C.	VIa	1910	E
Jeanotte, Arthur	VI	1904	E
Jelleme, William O.	I	1910	D

Name	Course	Class	Day or Evening
*Jenckes, Leland A.	VI	1908	D
Jennings, James J.	IIIa	1903	E
Jepson, Harry	Vb	1907	E
Johnson, Arthur K.	IV	1913	D
Johnson, Arthur O.	IVa	1914	E
Johnson, Ernest A.	IIa-b	1902	E
Johnson, Ernest A.	V	1906	E
Johnson, Samuel L.	V	1903	E
Jones, Everett A.	III	1905	D
Jones, Herbert	Ia	1913	E
Jones, William J.	IIb	1900	E
Jones, William J.	IIa	1901	E
Jordan, Frederic W.	IV	1910	E
Jorde, Linville T.	VIc	1910	E
Joyce, John	Vc	1909	E
Jubenville, Joseph D.	VIId	1916	E
Jury, Alfred E.	IV	1904	D
Kaler, Harold F.	VIb	1909	E
Kannheiser, Frank J.	IVa	1917	E
Kannheiser, William A.	Vb	1915	E
Kay, Harry P.	II	1909	D
Kearney, Thomas K.	Ia	1917	E
Keisling, William	Vb	1916	E
Keleher, John J.	IIb	1903	E
Keleher, John L.	VIId	1915	E
Kellett, Irvine	II	1899	E
Kelley, Bernard J., Jr.	VIc	1909	E
Kelly, Michael H.	Ia	1902	E
Kelly, Michael H.	IIIa	1907	E
Kelly, Thomas F.	IVa	1915	E
Kennedy, Leo J.	IVa	1917	E
Kennedy, William E.	VIa	1911	E
Kenney, Raymond J.	IVa	1917	E
*Kent, Arthur	VIb	1912	E
*Kent, Arthur	VIId	1914	E
Kent, Clarence L.	III-V	1906	D
Kent, Ernest J.	IIb	1902	E
*Kenworthy, Joseph	Ia	1905	E
Kenyon, Herbert	Ia	1915	E
Keough, Wesley L.	II	1910	D
Kerrigan, Arthur J.	VIa	1912	E
Kershaw, Benn	Va	1909	E
Kershaw, Benn	Vc	1910	E
Kershaw, Samuel S.	IIb	1910	E
Kershaw, Samuel S.	Vb	1913	E
Kershaw, William E.	V	1904	E
Kidd, Thomas E.	IV	1906	E
Kiessling, Robert H.	Ia	1917	E
Killerby, Walter	IIb	1901	E
Kimball, Irving D.	VI	1905	E
Kingsbury, Percy F.	IV	1901	D
Kirkpatrick, Lloyd A.	Ia	1914	E
Kirsch, Alfred O.	Vb	1907	E
Kitchen, Walter G.	Ib	1917	E
Knowland, Daniel P.	IV	1907	D
Knowles, Frank E.	Ia	1903	E

*Deceased

Name	Course	Class	Day or Evening
Krause, George R.	VII	1910	E
Kyle, George S.	Ia	1915	E
Lachance, Melina (See Payette, Mrs. Wilfred)			
Laffert, August W.	IIIa	1906	E
Laffert, August W.	VII	1907	E
Lagerblad, Jarl	VII	1908	E
LaJeunesse, Joseph A.	IVa	1910	E
LaJeunesse, Joseph A.	IVc	1913	E
Lake, William F.	IIIa	1907	E
Lake, William F.	P. G. IIIa	1908	E
Lakeman, Fannie S.	IIIb	1900	D
Lamb, Arthur F.	II	1910	D
Lambert, Mrs. Arthur	IIIb	1916	E
Lambert, Harry	IIb	1912	E
Lambert, Harry	Vb	1915	E
Lambert, Seth	IIb	1913	E
Lamont, Robert L.	II	1912	D
Lamont, Walter M.	IIb	1902	E
Lamprey, Leslie B.	IV	1916	D
Lamson, George F.	I	1900	D
Lamson, George F.	VI	1905	E
Lane, John W.	I	1906	D
Lane, John W.	I-V	1907	D
Lane, Lewis D.	VIId	1916	E
Lane, Michael J.	VII	1915	E
Lane, Oliver F.	IV	1915	D
Lang, William A.	Vc	1913	E
Langevin, Felix D.	VI	1904	E
Langevin, George F.	VIb	1915	E
Langevin, George F.	VIa	1917	E
Langford, Frederick T.	VII	1917	E
Lapierre, Alderic S.	IIIa	1912	E
LaPorte, Mary E. (See Lambert, Mrs. Arthur)			
LaPorte, Philip J.	IVa	1912	E
LaPrise, Frank E.	IVa	1914	E
Larkin, Mrs. Joseph P.	IIIb	1910	E
Larue, Isabella G.	IIIb	1916	E
Laughlin, James K.	III	1909	D
Laurin, Erick T. L.	VIb	1914	E
LaVigne, Andre J.	VIb	1917	E
Law, Alfred	IIb	1901	E
Lawliss, Augustine J.	V	1902	E
Lawrence, Abbott	VIId	1916	E
Lawrence, Charles	Ia	1903	E
Laycock, Berry	VII	1917	E
Leach, John P.	I-V	1900	D
Leach, Joseph W.	V	1903	E
Learned, Frank E.	Va	1913	E
Learned, Frank E.	Vc	1914	E
Leather, Seward S.	IIb	1915	E
Leaver, Frederick W.	Ia	1917	E
Leaver, Harold E.	IIb	1914	E
Leaver, Harry	IVa	1916	E
Leaver, Raymond J.	VIb	1913	E
Leck, Arthur J.	VII	1910	E
Ledoux, Blanche H.	IIIb	1910	E
Lee, Charles	Ia	1902	E

Name	Course	Class	Day or Evening
Lee, William H.	V	1905	D
Lees, William H.	IIIa	1915	E
Leitch, Harold W.	IV	1914	D
Leith, Edwin E.	IIIa	1902	E
Leith, Joseph E.	Vb	1912	E
Leith, Joseph E.	IIIa	1914	E
Leland, Raymond C.	VIIb	1915	E
Lemire, Arthur	Ia	1910	E
Lemire, Arthur	Va	1911	E
Leonard, Charles W.	VII	1913	E
Leonard, Charles W.	IVb	1915	E
Levi, Alfred S.	IV	1909	D
Lewis, Charles S.	VIa	1914	E
Lewis, LeRoy C.	IV	1908	D
Lewis, Walter S.	IV	1905	D
Libby, C. Robert	VI	1902	E
Lightbown, William H.	Vb	1915	E
Lillis, Marvin H.	IV	1914	D
Linberg, Joseph F.	IVa	1911	E
Lincourt, Hector L.	VI	1903	E
Lincourt, Henry E.	VIIb	1909	E
Linehan, Thomas W.	VII	1914	E
Linkletter, Alfred C.	VI	1905	E
Lister, Henry	VII	1915	E
Lockberg, John L.	VId	1912	E
Logan, George H. S.	IV	1911	E
Logan, Robert F.	Va	1915	E
Looby, George A.	Vc	1914	E
Lord, Harry D.	IIIa	1904	E
Lord, Wilfred	IIIa	1901	E
Lord, Wilfred	IIB	1903	E
Lord, Wilfred	IIa	1904	E
Loupret, George J.	IVa	1917	E
Lovell, Charles E.	VI	1905	E
Lowe, Harry F.	Va	1913	E
Lowe, Harry F.	Vb	1914	E
Lowe, John C.	IIB	1912	E
Lowe, John C.	Vb	1916	E
Lowney, May E. P.	VIa	1917	E
Luce, Harry A.	VII	1914	E
Luce, Harry A.	IIIa	1915	E
Lucey, Edmund A.	II	1904	D
Lunan, Karl S.	VIa	1916	E
Lund, Stanley W.	VIIb	1916	E
Lutz, Alwin	VIa	1917	E
Lutz, Leo A.	Vb	1917	E
Lutz, Paul P.	Vb	1917	E
Lynch, John	VId	1916	E
*McAlister, John W.	V	1899	E
McAuliffe, Patrick D.	VIIb	1910	E
McBride, Robert G.	IIa	1904	E
McCann, James J.	Vb	1917	E
McCann, Martin	Vb	1912	E
McCarthy, Joseph F.	IIIa	1906	E
McCartin, Marietta L.	IIIa	1915	E
McClure, Charles G.	VIIb	1909	E

*Deceased

Name	Course	Class	Day or Evening
McCool, Frank L.	IV	1910	D
McDermott, James	VII	1916	E
McDermott, Thomas R.	IVa	1917	E
Macdonald, Chester W.	VIa	1912	E
MacDonald, John F.	Va	1914	E
McDonald, William A.	VIb	1913	E
McDonnell, William H.	I-V	1906	D
McElroy, Claude R.	VIId	1914	E
McElroy, Samuel H.	Vb	1910	E
McGaunn, Charles	VIId	1915	E
McGaunn, Theodore	VIId	1915	E
*McGee, David	IVa	1915	E
MacGeoch, James A.	IIIa	1917	E
McGill, Francis J.	VII	1917	E
McGill, William E.	VII	1908	E
*McGovern, James	VII	1908	E
McGowan, Annie C.	IIIb	1913	E
McGowan, Frank R.	VI	1915	D
McGrath, William F.	VII	1915	E
McGurn, James P.	VIId	1913	E
Mack, Clarence P.	IIIa	1914	E
Mackay, Stewart	III	1907	D
McKenna, Hugh F.	IV	1905	D
McKenna, Jeremiah J.	Vb	1908	E
McKittrick, Percy A.	VIa	1916	E
McLaughlin, Peter J.	Ia	1906	E
McLay, John	Vb	1906	E
McLay, John	IIb	1909	E
McManus, Hugh	V	1905	E
McNabb, Alice M.	IIIb	1917	E
McNamara, Thomas	Vb	1911	E
Macnee, Forrest F.	IIb	1914	E
MacPherson, Wallace A.	III	1904	D
McQuade, Hugh B.	V	1901	E
Mabbett, Albert L.	IIIa	1910	E
Madden, Peter	Va	1909	E
Maden, Harry	IIb	1900	E
Magee, William J.	IVa	1917	E
Maguire, Andrew F.	Vb	1913	E
Maguire, James H.	VI	1905	E
Maguire, James H.	Ia	1906	E
Maguire, James H.	IIb	1915	E
Mahoney, Dennis J.	Vb	1909	E
Mahoney, Joseph	Vc	1914	E
Mailley, Howard T.	II	1908	D
Maker, Isaac A.	Ia	1908	E
Manning, Frederick D.	IV	1910	D
Manning, James B.	IVa	1911	E
Manning, James B.	IVb	1913	E
Marjerison, Isaiah D.	II	1899	E
Marjerison, T. Sydney	IIIa	1907	E
Marjerison, T. Sidney	P. G. IIIa	1908	E
Marinel, Walter N.	I	1901	D
Marsden, Fred	IIIa	1915	E
Marsden, Phillips B.	IVa	1911	E
Marshall, Fred K. R.	VI	1908	E

*Deceased

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Name	Course	Class	Day or Evening
Martin, Harry W.	IV	1911	D
*Martin, John C., Jr.	IIa-b	1905	E
Martin, Willard E.	IIIa	1907	E
Mason, Archibald L.	VI	1909	D
Mason, Frederick A.	Ia	1903	E
Mather, Harold T.	VI	1913	D
Mathews, William T.	Ia	1917	E
Matthews, Elmer C.	II	1917	D
Maxcy, Leo M.	VIc	1910	E
Maynard, Wilfred B.	VII	1913	E
Meadows, William R.	I	1904	D
Mears, Lewis N.	IVa	1914	E
Mears, Lewis N.	IVb	1917	E
Meek, Lotta (See Parker, Mrs. Herbert L.)			
Meinelt, Theodore E.	VIa	1917	E
Merchant, Edith C.	IIIb	1900	D
Merrill, Allan B.	IV	1911	D
Merrill, Edwin C.	VI	1904	E
Merrill, Gilbert R.	VI d	1917	E
Merrill, Lester C.	VI b	1915	E
Merriman, Earl C.	II	1907	D
Messiah, Hiram G.	Vb	1910	E
Metcalfe, Walter B.	IIb	1913	E
Michael, Joseph C.	Vb	1912	E
Michelmore, Harry	IIIa	1906	E
Michelmore, Harry	VII	1907	E
Midwood, Arnold J.	IV	1905	D
Miller, Emil H.	V	1904	E
Miller, Ernest P., Jr.	Ib	1913	E
Milot, Aram A.	Vb	1914	E
Milot, Joseph E.	VIc	1911	E
Minge, Jackson C.	I-V	1901	D
Minge, Jackson C.	IIIa	1901	E
Moffatt, Elmer W.	Ia	1917	E
*Moir, Alexander L.	IIIa	1899	E
*Moir, Alexander L.	P. G. IIIa	1903	E
Molloy, Andrew	V	1902	E
Molloy, Andrew	IIIa	1905	E
Molloy, Andrew	P. G. IIIa	1906	E
Molloy, Andrew	P. G. IIIa	1909	E
Molloy, Francis H.	II	1916	D
Monahan, Patrick H.	VI d	1913	E
Moore, Everett B.	I	1905	D
Moore, Karl R.	IV	1911	D
Moorehouse, Thomas	VI	1904	E
Moorhouse, William R.	IV	1901	D
Morin, Alphonse W.	VI d	1917	E
Morrill, Howard A.	VI	1916	D
Morris, Frank A.	V	1901	E
Morrison, Fred C.	I	1903	D
*Mortenson, Carl W.	IIIa	1903	E
*Mortenson, Carl W.	IIa	1908	E
Morton, Albert N.	IIb	1906	E
Mosher, Chester L.	VI b	1916	E
Moss, Joseph	Ia	1915	E
Mountain, Everett R.	Ia	1915	E

*Deceased

Name	Course	Class	Day or Evening
*Mozley, Arthur	VI	1903	E
Muldoon, Joseph M.	VIb	1912	E
Mullen, Arthur T.	II	1909	D
Mullen, Frank J.	VIId	1914	E
Munroe, Sydney P.	I	1912	D
Murphy, Cornelius D.	IIa	1906	E
Murphy, Howard H.	IIb	1911	E
Murphy, John	VIb	1916	E
Murphy, John H.	VI	1904	E
Murphy, Leo T.	Vc	1913	E
Murphy, Mrs. (Gookin, Alice L.)	IIIb	1910	E
Murray, James	IV	1913	D
Murray, James A.	II	1910	D
Musard, Albert E., Jr.	Vc	1909	E
Musard, Henry A.	Vc	1913	E
Myers, James W.	IIIa-IV	1903	E
Myers, James W.	VII	1907	E
Najar, G. Geo.	IV	1903	D
Naud, Mary A.	IIIb	1917	E
*Naylor, Charles	IVa	1912	E
Neel, Andrew, Jr.	IVa	1915	E
Nelson, Charles E.	IIb	1907	E
Nelson, Ernest H.	IIb	1900	E
Nelson, Ernest H.	IIa	1901	E
Nelson, Ernest H.	IIIa	1906	E
Nelson, Ernest H.	Ia	1909	E
Nelson, Ernest H.	Vc	1910	E
Nelson, Ernest H.	Ib	1913	E
Nelson, Gustave A.	Vb	1910	E
Nelson, James A.	Ia	1911	E
Nelson, James A.	Va	1916	E
Nelson, Sigfred W.	VIId	1911	E
Newall, J. Douglas	IV	1909	D
Newall, Preston	Ia	1911	E
Newcomb, Guy H.	IV	1906	D
Newsholme, Charles E.	VIb	1911	E
Neyman, Julius E.	IV	1915	D
Nichol, Samuel J.	IVa	1911	E
Nichol, Samuel J.	IVb	1914	E
Nichols, Clarence W.	Vb	1910	E
Nichols, Fernald H.	VIb	1914	E
Nichols, Nathan A.	VIb	1911	E
Nichols, Raymond E.	VI	1910	D
Nicholson, Richard	IIb	1903	E
Nicoll, James K.	VIId	1915	E
Nicoll, John	IVa	1910	E
Nicoll, John	IVb	1913	E
Niven, Robert S.	VI	1912	D
Noble, John T.	V	1899	E
Noble, John T.	IIIa	1901	E
Noonan, Denis T.	IIIa	1903	E
Noring, Ernest G.	VII	1916	E
Noring, Ernest G.	Vb	1917	E
Notman, Frederick W.	Ia	1904	E
Nugent, Thomas A.	II-V	1899	E

*Deceased

Name	Course	Class	Day or Evening
Nugent, Thomas A.	VI	1902	E
Nutter, James R.	VI	1908	E
O'Brien, David A.	IV	1906	E
O'Brien, Frederick A.	VIb	1914	E
O'Brien, Michael F.	IIb	1907	E
O'Brien, Philip F.	II	1915	D
O'Brien, Raymond L.	IVa	1915	E
O'Brien, Richard C.	IIIa-VII	1917	E
Obst, Ehrich	VId	1915	E
O'Connell, Clarence E.	IV	1911	D
O'Connor, Frank H.	Ia	1915	E
O'Connor, Lawrence D.	VI	1917	D
O'Donnell, John D.	I-V	1904	D
Ogley, Samuel A.	IIb	1900	E
O'Hara, William F.	IV	1904	D
O'Neill, Peter F.	IV	1905	E
Orrell, Ernest R.	VId	1913	E
Orrell, Frank L.	VIb	1909	E
Orrell, Frank L.	IIb	1912	E
Orrell, Frank L.	Vb	1913	E
*Osbeck, William J	IIIa	1908	E
Osgood, Charles F.	Ia	1900	E
Osgood, Charles F.	VI	1902	E
Overend, John	V	1905	E
Palm, Carl H.	VIa	1912	E
Palmer, G. Buel	IIIa	1903	E
Palmer, G. Buel	Vb	1909	E
Paquin, Joseph	VIa	1909	E
Paquin, Joseph	VIb	1910	E
Parent, Louis J.	Ib	1917	E
Parker, B. Moore	I	1901	D
Parker, Charles L.	IVa	1917	E
Parker, Everett N.	I	1905	D
Parker, Harry C.	V	1900	D
Parker, John G.	Va	1914	E
Parker, Mrs. Herbert L.	IIIb	1907	D
Parkhurst, George E.	IVa	1917	E
Parkin, Prescott R.	Vb	1911	E
Parkis, William L.	I	1909	D
Parsons, Joseph G.	IIIa	1909	E
Patrick, Alexander	IIIa	1904	E
Patterson, Alfred H.	IIIa	1908	E
Paul, Frank M.	Ia	1917	E
Payette, Mrs. Wilfred	IIIb	1911	E
Peabody, Roger M.	II	1916	D
Pearson, Alfred H.	IV	1911	D
Pearson, Fred	VIa	1909	E
Pease, Chester C.	I	1909	D
Peck, Carroll W.	IV	1913	D
Pedler, William A.	Ia	1906	E
Pedler, William A.	IVa	1911	E
Peel, Hudson	IIb	1901	E
Peel, Tom	IVa	1916	E
Pekarski, Louis A.	Vb	1917	E
Pendlebury, David	Ia	1915	E

*Deceased

Name	Course	Class	Day or Evening
Pendlebury, David	Ia	1916	E
Pendlebury, Harold	VI d	1915	E
Pensel, George R.	IV	1913	D
Perkins, John E.	III	1900	D
Perkins, J. Dean	III	1908	D
Perkins, Thomas, Jr.	Ia	1908	E
Perlman, Samuel	IV	1917	D
Perron, Francis J.	Vb	1911	E
Perron, Francis J.	IIIa	1916	E
Perron, Francis J.	VII	1917	E
Perry, Clarence R.	IIb	1911	E
Petterson, Birger	VIa	1910	E
Petty, George E.	I-V	1903	D
Phelps, Mary I. (See Larkin, Mrs. Joseph P.)			
Picken, William T.	IIIa	1908	E
Pickles, Wilfrid	Va	1914	E
Pierce, Duncan H.	VII	1914	E
Pierce, Gordon J.	Vb	1914	E
Pihl, Christian E.	VI	1906	E
Pihl, Ingrid I. (See Robinson, Mrs. James P.)			
Pihl, Mansfred M.	VIb	1914	E
Pihl, Mansfred M.	VI d	1917	E
Pike, Daniel P.	IVa	1915	E
Pillsbury, Ray C.	I	1913	D
Pinkham, Banford O.	VI d	1914	E
Pittendreigh, John M.	Ia	1906	E
Playdon, Louis C.	Ia	1914	E
Playdon, Roy A.	IIb	1916	E
Plumer, Paul T.	Vb	1908	E
Plummer, Elliott B.	IV	1913	D
Poore, Herbert E.	IVa	1915	E
Porter, George K., Jr.	IIIa	1907	E
Porter, George K., Jr.	P. G. IIIa	1908	E
Porter, William E.	VIa	1915	E
Potter, Carl H.	I	1909	D
Potter, Richard W.	V	1902	E
Pottinger, James G.	II	1912	D
Pradel, Mrs. Alois J.	IIIb	1903	D
Preble, George A.	IIIa	1908	E
Preble, George A.	Va	1912	E
Preble, George A.	Vb-c	1913	E
Preble, George A.	IVa	1915	E
Prescott, Walker F.	IV	1909	D
Prescott, William B.	Va	1912	E
Prince, Sylvanus C.	VI	1908	D
Prisley, Frederic A.	IVa	1917	E
Proctor, Braman	IV	1908	D
Protopapas, Taxiarchis Z.	IIIb	1917	E
Putnam, George I.	IV	1916	D
Putnam, Leverett N.	IV	1910	D
Putnam, Philip C.	IV	1913	D
Quance, Alfred	IVa	1916	E
Quinn, James H.	VII	1913	E
Racicot, Marie E.	IIIb	1911	E
Ramsdell, Theodore E.	I	1902	D
Randall, William O.	IIb	1913	E
*Rasche, William A.	III	1903	D

Name	Course	Class	Day or Evening
Raymond, Charles A.	IV	1907	D
Read, Paul A.	VII	1907	E
Read, Paul A.	Va	1909	E
Reardon, Timothy H.	VI	1906	E
Redman, Henry S.	IIIa	1904	E
Redman, Henry S.	V	1905	E
Redman, Henry S.	Ia	1907	E
Redman, Henry S.	IV	1910	E
Redman, Henry S.	VIa	1912	E
Redman, Henry S.	Ib	1913	E
Redpath, Robert H.	VII	1913	E
Redpath, Robert H.	Vb	1914	E
Ready, William C.	VIIb	1917	E
Reed, Foster C. K.	VI	1904	E
Reed, Norman B.	I	1910	D
Regan, Joseph L.	VIIb	1915	E
Reynolds, Eugene A.	VI	1906	E
Reynolds, Fred B.	II	1908	D
Reynolds, Hiram L.	IIIa	1901	E
Reynolds, Isabel H.	III-V	1903	D
Reynolds, Isabel H.	P. G. III-V	1906	D
Reynolds, James J.	Vc	1913	E
Rhodes, Joseph E.	V	1904	E
Rhodes, William H.	IIIa	1916	E
Rich, Edward	IV	1915	D
Rich, Everett B.	III	1911	D
Richards, Francis G.	IIa	1906	E
Richards, Raymond A.	IIIb	1915	E
Richardson, George O.	IV	1916	D
Richardson, Richardson P.	I	1913	D
Riggs, Homer C.	VI	1917	D
Riley, Edward T.	IIIa	1912	E
Ripley, George K.	II	1917	D
*Ritter, Alfred E.	IIb	1907	E
Robbins, John	IIb	1907	E
Roberson, Pat H.	I	1905	D
Roberts, Carrie I.	IIIb	1905	D
Roberts, Joseph	Vb	1915	E
Roberts, Kenneth B.	VIIb	1917	E
Robinson, Ernest W.	IV	1908	D
Robinson, James E.	VII	1911	E
Robinson, Mrs. James P.	IIIb	1912	E
Robinson, Ruddach P.	VII	1911	E
Robinson, Thomas	Ia	1909	E
Robinson, Thomas	Vc	1910	E
Robinson, William C.	III-V	1903	D
Robson, Frederick W. C.	IV	1910	D
Roche, Raymond V.	IV	1912	D
Rockwell, Henry D.	IIa	1903	E
Rockwell, Samuel F.	IIa	1902	E
Rodger, Thomas C.	IVa	1915	E
*Roesler, Alfred	IIIa	1914	E
Rogers, John F.	Ia	1911	E
Rollins, Henry E.	VII	1912	E
Rollins, Sidney R.	IIb	1913	E
Rooney, George W.	Ia	1904	E
Root, Francis X., Jr.	IIIa	1910	E

*Deceased

Name	Course	Class	Day or Evening
Rostron, Robert	Va	1916	E
Rouine, Francis E.	VIb	1914	E
*Rowell, Herman C.	Ia-IIb	1900	E
Rowlands, Harold	Va	1911	E
Royds, James	Ia	1912	E
Rundlett, Arnold D.	VI	1912	D
Rushworth, Walter	VI	1906	E
Rutledge, Robert J.	Ia-Va	1917	E
Ryan, Edward P.	Ia	1909	E
Saalfrank, Joseph C.	IIIa	1908	E
Sanborn, Harold S.	VII	1915	E
Sanborn, Ralph L.	VI	1916	D
Saunders, Edward B.	IIIa	1901	E
Saunders, Harold F.	IV	1909	D
Saunders, Louis P.	Vb	1916	E
Savage, Charles F.	IVa	1912	E
Sawyer, Joseph W.	IV	1915	D
Sawyer, Samuel S.	VIa	1917	E
Scally, Edward	VI	1908	E
Scanlon, Edward J.	IIb	1901	E
Schermerhorn, George E.	Ia	1902	E
Schermerhorn, George E.	Va	1908	E
Schmidt, Hartman F.	IIb - VII	1914	E
Schmidt, Hartman F.	IIa	1915	E
Schofield, John S.	IIIa	1903	E
Schoon, Fenton	IIb	1903	E
Schubert, George J.	V	1906	E
Schubert, George J.	IIIa	1909	E
Schuerfeld, Harry W.	IIIa	1909	E
Schultz, Hughey B.	VIb	1917	E
Schuster, Raymond H.	VII	1917	E
Schuster, William F.	VII	1908	E
Schwarzenberg, Raymond C.	VIb	1917	E
Scully, Patrick F.	IIIa-VII	1915	E
Scully, Patrick F.	Vb	1916	E
Seddon, N. Graham	IIIa	1908	E
Semple, Alexander	IIIa	1908	E
Senior, George	Va	1906	E
Senior, George	Ia-Vc	1907	E
Shaber, Hyman J.	VI	1917	D
Shackleton, John H.	IV	1908	E
Shackleton, John H.	Ia	1910	E
Shaffer, William A.	VId	1911	E
Shannon, Philip J.	V	1901	E
Sharpe, John R.	VI	1906	E
Sharples, Lloyd K.	VII	1917	E
Shaw, Albert	VIb	1916	E
Shaw, James	V	1904	E
Shaw, William	VIa	1913	E
Shaw, William	Ia	1917	E
Shea, Francis J.	II	1912	D
Shearer, David D.	VII	1912	E
Shearer, David D.	Vb	1913	E
Shearer, William A.	Vb	1915	E
Shedd, Howard P.	IVb	1915	E
Sheppard, Byron H.	VI	1906	E
Shields, John J.	Va	1911	E

*Deceased

Name	Course	Class	Day or Evening
Sidebottom, Leon W.	IV	1911	D
Silcox, Arthur E.	Ia	1900	E
Silk, Frederick C. M.	IV	1905	E
Silk, Patrick E.	VII	1906	E
Simmers, Arthur A.	VIIb	1915	E
Simola, Emil J.	IIa-b	1905	E
*Simoneau, Verner W.	VI	1908	E
Sjostrom, Carl G. V., Jr.	III	1917	D
Skidmore, Russell P.	VIIb	1912	E
Skinner, Clarence W.	IIIa	1905	E
Skinner, Clarence W.	P. G. IIIa	1906	E
Skinner, Clarence W.	VII	1907	E
Slater, Arthur C.	IVa	1917	E
Sleeper, Robert R.	IV	1900	D
Sleeper, Robert R.	VII	1913	E
Smart, George A.	Va	1915	E
Smart, George A.	Vc	1916	E
*Smith, Albert A.	I	1899	D
Smith, Arthur	IIIa	1905	E
Smith, Arthur	P. G. IIIa	1906	E
Smith, Arthur	Va	1906	E
Smith, Arthur	Vc	1907	E
Smith, Arthur	P. G. IIIa	1909	E
Smith, Doane W.	II	1910	D
Smith, Edward	Ia	1904	E
Smith, Edwin H.	IVa	1916	E
Smith, Ernest B.	Vb	1907	E
*Smith, Fred	IIb	1901	E
Smith, George A.	IIIa	1905	E
Smith, George A.	P. G. IIIa	1906	E
Smith, George A.	VII	1909	E
Smith, Gordon N.	IVa	1915	E
Smith, James	Vb	1907	E
Smith, John W.	IIb	1904	E
Smith, Joseph	VId	1917	E
Smith, Leonard*	VIA	1914	E
Smith, Mae V. (See Alexander, Mrs. James)			
Smith, Miles H.	IIb	1915	E
Smith, Miles H.	Vb	1916	E
Smith, Miles H.	VII	1917	E
Smith, Percy H.	Vb	1907	E
Smith, Ralston F.	I	1904	D
Smith, Stephen E.	I	1900	D
Smith, Theophilus G., Jr.	IV	1910	D
Smith, William E.	IIIa	1905	E
Smith, William E.	P. G. IIIa	1906	E
Smith, William E.	VII	1907	E
Smith, William E.	P. G. IIIa	1909	E
Smith, William F.	VId	1912	E
Smith, William H.	IIb	1902	E
Snelling, Fred N.	II	1903	D
Snickers, Eugene	Ia	1915	E
Snickers, Eugene	Ia	1916	E
Snow, Fred L.	IV	1900	E
Sokolsky, Henry	VI	1917	D
Sorenson, David P.	IIIa	1916	E
Soule, William N.	VId	1913	E

Name	Course	Class	Day or Evening
Spedding, Ephraim H.	IIIa	1899	E
Spiegel, Edward	V	1903	D
Spillane, James F.	VIa	1916	E
Spurr, Albert R.	VII	1908	E
Spurr, James H., Jr.	IV	1908	E
Stafford, James	Va	1915	E
Stahl, Milton C.	IIb	1915	E
Standish, John C.	IV	1911	D
Stanley, John R.	IIb	1911	E
Stearns, Orlo F.	IVa	1911	E
Steere, Samuel A.	Va	1914	E
Sterling, Walter	IIIa	1904	E
Stevens, Dexter	I	1904	D
Stevens, Frank W.	VI	1905	E
Stevens, Harold S.	IIIa	1912	E
Stevenson, Murray R.	III-V	1903	D
Stevenson, Robert P.	Ia	1912	E
Stevenson, William	II	1899	E
Stevenson, William	IIIa	1902	E
Stewart, Arthur A.	II	1900	D
Stewart, Charles	Va	1908	E
Stewart, George	Ia-IVa	1911	E
Stewart, George	Va	1914	E
Stewart, George	VIa	1916	E
Stewart, Walter L.	III	1903	D
Stewart, Warren D.	IVa	1915	E
Stewart, William W.	IV	1910	E
Stiehler, Arthur F.	Vb	1915	E
Stocks, Carl W.	VIa	1909	E
Stohn, Alexander C.	III-V	1906	D
Stokham, Burton I.	IV	1903	E
Stokham, Burton I.	P. G. IV	1904	E
Stokham, Ernest F.	IVa	1914	E
Stone, Ira A.	IV	1909	D
Stopherd, William H.	II-V	1899	E
Stopherd, William H.	VI	1902	E
Stopherd, William H.	IIIa	1905	E
Stopherd, William H.	P. G. IIIa	1906	E
Stopherd, William H.	P. G. IIIa	1909	E
Stopherd, William H.	VII	1910	E
Storer, Francis E.	II	1907	D
Stott, Bertram S.	Vb	1910	E
Stott, Samuel	IV	1910	E
Stronach, Irving N.	IV	1910	D
*Stursberg, Paul W.	II	1907	D
Sturtevant, Albert W.	IV	1917	D
Sugden, Albert G.	IIIa	1912	E
Sugden, Albert G.	VII	1913	E
Sullivan, Edward B.	Va	1917	E
*Sullivan, Humphrey F.	Ia	1909	E
Sullivan, John D.	VI	1912	D
Sullivan, Joseph D.	IIIa	1916	E
Sullivan, Michael F.	VIIb	1910	E
Sullivan, Michael F.	VIa	1913	E
Sutton, Leslie E.	I	1917	D
Swan, Guy C.	II	1906	D
Swanson, Victor E.	IVa	1912	E

*Deceased

Name	Course	Class	Day or Evening
Swift, Edward S.	V	1899	E
Swift, Edward S.	Ia	1901	E
Swift, Edward S.	I	1902	D
Swift, John W.	IIb	1915	E
Sykes, Alvin E.	VIa	1909	E
Sylvain, Charles E.	VI	1913	D
Syme, James F.	II	1900	D
Taff, Joseph C.	VIa	1916	E
Takahashi, Gentaro	Ia	1916	E
Talbot, Joseph	IVa	1917	E
Tarpey, John F.	IIa	1904	E
Taylor, Fred H.	Va	1916	E
Taylor, Harold S.	VIb	1912	E
Teichmann, Alfred A.	Vb	1908	E
Tennant, Joseph A.	VIb	1911	E
Thaxter, Joseph B., Jr.	II	1912	D
Thomas, Roland V.	I	1905	D
Thompson, Charles B.	VI	1904	E
Thompson, Everett L.	I	1905	D
Thompson, George	Vb	1915	E
Thompson, Henry J.	IV	1900	D
Thyng, Thomas C.	VIa	1917	E
*Tilton, Elliott T.	II	1899	D
Todd, Henry	VII	1910	E
Todd, Walter E.	VII	1916	E
Todd, Walter E.	Vb	1917	E
Toepler, Carl	IVa	1917	E
Tonge, John	IV	1905	E
Tonge, Matthew	IIIa	1903	E
Toovey, Sidney E.	V	1904	D
Torpey, Henry K. W.	VIb	1914	E
Torpey, Henry K. W.	IVa	1915	E
Toshach, Reginald A.	II	1911	D
Towers, Frederic G.	Ia	1912	E
Tremblay, Joseph A.	IVa	1917	E
Tucker, Charles L.	Ia	1916	E
Tucker, John T.	Ia	1908	E
Tucker, John T.	Va	1909	E
Tucker, William W.	Ia	1916	E
Turgeon, Roderick	IVa	1912	E
Turner, Roscoe C.	IIb	1914	E
Twomey, Hugh	VId	1914	E
Tyler, Lauriston W.	II	1916	D
Umpleby, Thomas B.	V	1902	E
Upton, Frank A.	Ia	1903	E
*Varney, Manley H.	IIIa	1902	E
*Varney, Manley H.	Ia	1903	E
Varnum, Arthur C.	II	1906	D
Varnum, Arthur C.	Vb	1907	E
Varnum, Arthur C.	P. G. IIIa	1908	E
Varnum, Arthur C.	VII	1909	E
Vause, John	Va	1912	E
Vogt, Alfred H.	IIIa	1902	E
Vogt, Alfred H.	IIb	1909	E
Vogt, Harry A.	Vb	1906	E
Wade, Frank J.	Vb	1911	E
Wahlberg, Einar S.	Ia	1907	E

*Deceased

Name	Course	Class	Day or Evening
Wainwright, Harold	IVa	1913	E
Wainwright, Harold	IVb	1916	E
Walen, Ernest D.	VI	1914	D
Walker, Alfred S.	II	1911	D
Walker, Anna G. (See Pradel, Mrs. Alois J.)			
Walker, David	IIIa	1902	E
Walker, David	P. G. IIIa	1903	E
Walker, John J.	VIIb	1915	E
Walker, William, Jr.	VII	1906	E
Walsh, Michael L.	Ia	1909	E
Walton, Frank L.	Ia	1911	E
Walworth, Walter F.	VIIb	1915	E
Ward, Bernard D.	IIIa	1911	E
Ward, Herbert H.	Vb	1912	E
Ward, James J.	VII	1906	E
Wardrobe, William L.	Ia	1900	E
Ware, Edward W.	IIIa	1909	E
Waring, Joseph	VIa	1916	E
Warren, Philip H.	II	1905	D
Waterhouse, Joseph	IV	1900	E
Waters, Thomas W., Jr.	Va	1915	E
Waterworth, Frank W.	Vb	1907	E
Watson, Luther F.	IIb	1909	E
Watson, William	III	1911	D
Webb, Francis H.	V	1904	E
Webb, Francis H.	IIIa	1907	E
Webb, Frank H.	IV	1904	D
Webber, Arthur H.	IV	1901	D
Webb, John F.	IIIa	1907	E
Webber, John F.	P. G. IIIa	1908	E
Webster, Orrin H.	Ia	1912	E
Weigel, Frederick A.	VIIb	1909	E
Weinhold, William F.	IIIa	1915	E
Weinz, W. Elliot	IV	1908	D
Welch, Benjamin L.	VIIb	1910	E
Wesson, Paul B.	Ia	1901	E
West, Richard E.	IVa	1916	E
Wheeler, Harry L.	Ia	1917	E
Wheelock, Stanley H.	II	1905	D
*Whitcomb, Harry E.	Ia	1906	E
Whitcomb, Roscoe M.	IV	1910	D
White, Royal P.	II	1904	D
Whitehead, Bennett	IIb	1901	E
Whitehill, Warren H.	IV	1912	D
Whiteoak, Percy	IIb	1917	E
Whitley, Arthur M.	IIa-IIb	1915	E
Whitman, William P.	IVa	1910	E
Whitman, William P.	IVb	1913	E
Whitney, Frederick A.	IV	1910	E
Whittaker, Thomas B.	IIb	1907	E
Whittaker, Thomas B.	IIb	1908	E
Whittier, Arthur P.	Va	1917	E
Wicks, Frederic M.	IIIa	1912	E
Wiesberg, Harry A.	VIIb	1916	E
Wiggin, Leon M.	IIIa	1907	E
Wiggin, Leon M.	P. G. IIIa	1908	E
Wightman, William H.	IV	1906	D

Name	Course	Class	Day or Evening
Wilde, Herman E.	IVa	1915	E
Wilde, Thomas E.	IIa	1905	E
Wilkinson, Joseph	IIIa	1912	E
Wilkinson, Joseph	VII	1913	E
Wilkinson, William L.	IIIa	1917	E
Willey, Frank S.	Ia	1901	E
Willgeroth, Henry J.	IIIa	1908	E
Williams, Allen R.	Ia	1910	E
Williams, Allen R.	Va	1911	E
Williamson, Isaac F.	IV	1901	E
Willmott, Herbert J.	VIa	1911	E
Wilmot, Joseph	IIIa	1908	E
Wilmot, William	IIIa	1899	E
Wilson, Calvin E.	I Ib	1902	E
Wilson, George H.	I Ib	1902	E
Wilson, John S.	II	1903	D
*Wilson, Walter E. H.	I-V	1904	D
*Wilton, George H.	IIIa	1899	E
Wilton, George H.	IIIa	1917	E
Wing, Charles T.	IIIa	1900	E
Wing, Charles T.	III	1902	D
Wingate, William H.	IV	1908	D
Winkler, Adolph J.	VII	1917	E
Winship, Roger	Va	1917	E
Winslow, Warren A.	I Ib	1915	E
Wise, Paul T.	II	1901	D
Wiswall, Frank T.	V	1905	E
Wolf, William C.	Va	1907	E
Wolf, William C.	Vb	1908	E
Wolger, John J.	IIIa	1907	E
Wollin, Frederick W.	Va	1911	E
Wood, Arthur S.	Va	1912	E
Wood, Ernest H.	IV	1911	D
Wood, Herbert C.	I	1906	D
Wood, J. Carleton	IV	1909	D
Wood, Jonathan	Ia	1902	E
Wood, Jonathan	Va	1908	E
Wood, Lawrence B.	IV	1917	D
Wood, Samuel J.	Ia	1915	E
Woodbury, Eugene P.	VII	1914	E
Woodbury, W. Sanford	Ia	1900	E
Woodcock, Eugene C.	II	1907	D
Woodies, Ida A.	IIIb	1900	D
Woodies, Ida A.	P. G. IIIb	1901	D
Woodman, Harry L.	I-III-V	1902	D
Woodruff, Charles B.	V	1906	D
Worthington, John A.	Ia	1910	E
Wright, Edward, Jr.	II	1905	D
*Wright, Frederick J.	Vb	1911	E
Yare, John F.	Vb	1907	E
Yavner, Harry	II	1912	D
Yeates, Percy E.	Ia	1917	E
Young, Richard, Jr.	Va	1908	E
Young, Richard, Jr.	Vc	1909	E
Younger, Andrew	IIIa	1913	E
Younger, Andrew	VII	1914	E
Zimmer, George D.	IVa	1915	E

*Deceased

REGISTER OF GRADUATES

The following list has been corrected in accordance with information received previous to March 1, 1918. Any information regarding incorrect or missing addresses and occupations is earnestly solicited.

P. G. indicates Post Graduate Course.

Day Course, 1899

Name	Diploma Course	Graduates Occupation
Bailey, Joseph W.	I	Superintendent, Davis Mills, Fall River, Mass.
Cuttle, James H.	II	
Fels, August B.	II	With William Fels, Inc., New York City.
Harmon, Charles F.	I	
Smith, Albert A.	I	Deceased.
Tilton, Elliott T.	II	Died Jan. 1917.

Certificate Holders

Burrage, Katherine C.	IIIb	Died May 16, 1914.
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Evening Course, 1899

Certificate Holders

Berry, Frank M.	IIIa	Deceased.
Binns, Heaton	II-V	Foreman, James Irving & Son, Chester, Pa.
Broadbent, James T.	Ia	Agent and manager, Meritas Mills, New York City.
Collier, John	IIIa	Manager, John and James Dobson, Inc., Philadelphia, Pa.
Crompton, Henry H.	II	Overseer, Worsted Yarns, Pacific Mills, Lawrence, Mass.
Gaunt, Alfred C.	IIIa	Manager, Merrimack Mills, Methuen, Mass.
Kellett, Irvine	II	Second Hand, Worsted Yarns, Pacific Mills, Lawrence, Mass.
McAlister, John W.	V	Deceased.
Marjerison, Isaiah D.	II	Overseer, Worsted Combing, Lower Pacific Mills, Lawrence, Mass.
Moir, Alexander L.	IIIa	Died December, 1914.
Noble, John T.	V	Overseer, Sawyer Woolen Mills, Dover, N. H.
Nugent, Thomas A.	II-V	Overseer, Carding, Hudson Worsted Co., Hudson, Mass.
Spedding, Ephraim H.	IIIa	Dracut, Mass.
Stevenson, William	II	Manager, Carolina Cotton and Woolen Mills Co., Spray, N. C.

Name	Course	Occupation
Stopherd, William H.	II-V	With Saco-Lowell Shops, Lowell, Mass.
Swift, Edward S.	V	See Day, 1902.
Wilmot, William	IIIa	Designer, Hamilton Webb Co., Hamilton, R. I.
Wilton, George H.	IIIa	Deceased.

Day Course, 1900

Diploma Graduates

Baldwin, Arthur L.	IV	Chemist, Monarch Chemical Laboratory, Lowell, Mass.
Barr, I. Walwin	I	Manager, Mill Dept., F. U. Stearns & Co., New York City.
Bodwell, Henry A.	II	Superintendent, Smith and Dove Mfg. Co., Andover, Mass.
Brickett, Chauncey J.	II	Principal, School of Textiles, International Correspondence Schools, Scranton, Pa.
Lamson, George F.	I	With Morton Company, Worcester, Mass.
Perkins, John E.	III	Superintendent, S. N. and C. Russell Mfg. Co., Pittsfield, Mass.
Pradel, Alois J.	III	Designer, Montrose Woolen Mills, Woonsocket, R. I.
Sleeper, Robert R.	IV	Instructor in Dyeing, Lowell Textile School, Lowell, Mass.
Smith, Stephen E.	I	Head Instructor, Cotton Department, Lowell Textile School, Lowell, Mass.
Stewart, Arthur A.	II	Head Instructor, Finishing, Lowell Textile School, Lowell, Mass.
Syme, James F.	II	General Manager, D. Goff & Sons, Pawtucket, R. I.
Thompson, Henry J.	IV	Dyer, Boston Rubber Shoe Co., Malden, Mass.

Certificate Holders

Burrage, Katherine C.	P. G. IIIb	Deceased.
Campbell, Laura E.	IIIb	Died 1915.
Harrison, Mrs. Arthur (Goodhue, Amy H.)	IIIb	Dracut, Mass.
Lakeman, Fannie S.	IIIb	Designer, Salem, Mass.
Leach, John P.	I-V	Farmer, Littleton, N. C.
Merchant, Edith C.	IIIb	Supervisor of Drawing, Public Schools, Pepperell and West Boylston, Mass.
Parker, Harry C.	V	With George L. Parker, Boston, Mass.
Woodies, Ida A.	IIIb	Decorator, Lowell, Mass.

Evening Course, 1900

Certificate Holders

Campbell, Albert D.	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Cawthra, Albert B.	IIb	
Colby, Arthur D.	Ia	With Saco-Lowell Shops, Newton Upper Falls, Mass.

Name	Course	Occupation
Donnelly, James	Ia	Deceased.
Elston, Frederick R.	IIIa	Superintendent, Sonnhill Worsted Co., Danielson, Conn.
Howard, John	V	With Imperial Mills, Darby, Pa.
Hutton, Clarence	V	See Day, 1903.
Jones, William J.	IIb	Overseer, Worsted Spinning, U. S. Bunting Co., Lowell, Mass.
Maden, Harry	IIb	
Nelson, Ernest H.	IIb	With Ordnance Dept., Baltimore, Md.
Ogley, Samuel A.	IIb	Overseer, Worsted Spinning, Steere Worsted Mills, Providence, R. I.
Osgood, Charles F.	Ia	Draftsman, General Electric Company, Lynn, Mass.
Rowell, Herman C.	Ia-IIb	Deceased.
Silcox, Arthur E.	Ia	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Snow, Fred L.	IV	Tyngsboro, Mass.
Wardrobe, William L.	Ia	With Joslin Mfg. Co., Providence, R. I.
Waterhouse, Joseph	IV	Lowell, Mass.
Wing, Charles T.	IIIa	See Day, 1902.
Woodbury, W. Sanford	Ia	Superintendent of Carding and Finishing, Bay State Cotton Corp., Newburyport, Mass.

Day Course, 1901

Diploma Graduates

Buchan, Donald C.	II	Assistant Superintendent, Stevens Mills North Andover, Mass.
Currier, John A.	II	Superintendent, Pentucket Mills, M. T. Stevens and Sons Co., Haverhill, Mass.
Ewer, Nathaniel T.	IV	Chemist, American Dyewood Co., Chester, Pa.
Foster, Clifford E.	II	Superintendent, Superior Thread and Yarn Co., Philadelphia, Pa.
Kingsbury, Percy F.	IV	Head of Color Department, Passaic Print Works, Passaic, N. J.
Marinel, Walter N.	I	Automobile Repairing and Supplies, North Chelmsford, Mass.
Moorhouse, William R.	IV	Chemist, Century Colors Corporation, Boston, Mass.
Parker, B. Moore	I	Raleigh, N. C.
Webber, Arthur H.	IV	Color Chemist, Melville Color Co., Boston, Mass.
Wise, Paul T.	II	Vice-President and General Manager, Chelsea Fibre Mills, Brooklyn, N. Y.

Certificate Holders

Bradley, Richard H.	V	Second Hand, Hargreaves Mill No. 2, Fall River, Mass.
Harrison, Mrs. Arthur (Goodhue, Amy H.)	P. G. IIIb	See Day, 1900.
Minge, Jackson C.	I-V	
Woodies, Ida A.	P. G. IIIb	See Day, 1900.

Evening Course, 1901

Name	Certificate Course	Holders	Occupation
Aspinall, William	IIb	Chauffeur, Tamworth, N. H.	
Berry, Frank M.	V	Deceased.	
Brooks, Noah	IIIa-V		
Burghardt, Paul C.	IIa		
Buzzell, William O.	IIIa	Overseer, Weaving, Dartmouth Mfg. Corp., New Bedford, Mass.	
Cheetham, John James	IIIa	Overseer, Cabot Mfg. Co., Brunswick, Me.	
Chippindale, Ernest W.	IIb	Manager, Frank Parker Pile Wire Co., Lowell, Mass.	
Cowdell, Herbert	V	With T. Martin & Bro. Mfg. Co., Lowell, Mass.	
Davis, Henry	IIb	Deceased.	
Donovan, Daniel F.	IIa		
Evison, William A.	V	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.	
Farrell, Thomas	IIa	Woolen Spinner, Stirling Mills, Lowell, Mass.	
Frame, William C.	V	Overseer, Johnson & Johnson, New Brunswick, N. J.	
Gagan, John H.	V	With Clinton Woolen Co., Clinton, Mich.	
Grant, Archibald	IIb	Lowell, Mass.	
Grouke, Michael	IIb	Lowell, Mass.	
Hill, Daniel	IIb	Overseer, Passaic Worsted Spinning Co., Passaic, N. J.	
Hitchcock, Thomas B.	Ia-IIa-IIIa	President, Transocean Mercantile Co., Inc., Boston, Mass.	
Holgate, Charles H.	IIa	With A. R. Andrews Co., Boston, Mass.	
Hunter, Ralph	IIIa	Of Hall, Hartwell and Company, New York City.	
Jones, William J.	IIa	See Evening, 1900.	
Killerby, Walter	IIb	Overseer, Park Worsted Mill, Lowell, Mass.	
Law, Alfred	IIb	Overseer, Arlington Mills, Lawrence, Mass.	
Lord, Wilfred	IIIa	Assistant Superintendent, Worsted Dept., Pacific Mills, Lawrence, Mass.	
McQuade, Hugh B.	V	With U. S. Cartridge Co., Lowell, Mass.	
Minge, Jackson C.	IIIa		
Morris, Frank A.	V		
Nelson, Ernest H.	IIa	See Evening, 1900.	
Noble, John T.	IIIa	See Evening, 1899.	
Peel, Hudson	IIb	Section Hand, Arlington Mills, Lawrence, Mass.	
Reynolds, Hiram L.	IIIa	Agent, Saunders Cotton Mills, Saundersville, Mass.	
Saunders, Edward B.	IIIa	Salesman, Remington Typewriter Co., Fall River, Mass.	
Scanlon, Edward J.	IIb	Wood and Coal Dealer, Lawrence, Mass.	
Shannon, Philip J.	V	Die Maker, Tubular Rivet and Stud Company, Wollaston, Mass.	
Smith, Fred	IIb	Deceased.	
Swift, Edward S.	Ia	See Day, 1902.	
Wesson, Paul B.	Ia	Mechanical Superintendent, Wright Wire Co., Palmer, Mass.	

Name	Course	Occupation
Whitehead, Bennett	IIb	Overseer, Wood Worsted Mills, Lawrence, Mass.
Wiley, Frank S.	Ia	Overseer, Jenckes Spinning Co., Pawtucket, R. I.
Williamson, Isaac F.	IV	Foreman Dyer, Hamilton Mfg. Co., Lowell, Mass.

Day Course, 1902

Diploma Graduates

Burnham, Frank E.	IV	Control Chemist, Marden, Orth and Hastings, Newark, N. J.
Carter, Robert A.	IV	Textile Chemist, Roessler & Hasslacher Chemical Company, New York City.
Craig, Clarence E.	III	Farmer, Derry, N. H.
Haskell, Walter F.	IV	Overseer of Dyeing, Dana Warp Mills, Westbrook, Me.
Ramsdell, Theodore E.	I	Agent, Monument Mills, Housatonic, Mass.
Swift, Edward S.	I	Student, Woodstock College, Woodstock, Md.
Wing, Charles T.	III	Quartermaster's Department, Plymouth, Mass.

Certificate Holders

Curran, Charles E.	II-III-V	Head Designer, Wood Worsted Mills, Lawrence, Mass.
Ferguson, Arthur F.	I	See Day, 1903.
Harris, George S.	I	Agent and Superintendent, Lanett Cotton Mills, and Agent Lanett Bleachery and Dye Works, Lanett, Ala.
Holgate, Benjamin	III	Head of Planning and Schedule Dept., Boott Mills, Lowell, Mass.
Woodman, Harry L.	I-III-V	Draftsman, Saco-Lowell Shops, Lowell, Mass.

Evening Course, 1902

Certificate Holders

Adams, William R.	IIa	North Andover, Mass.
Barlow, Robert	V	Lowell, Mass.
Binns, Heaton	VI	See Evening, 1899.
Bowring, George P. B.	VI	Foreman, Forge Shop, Chapman Mfg. Co., Winchester, Mass.
Brainerd, Irving L.	Ia	Deceased.
Burghardt, Edward S.	IIa	
Buzzell, William O.	P. G. IIIa	See Evening, 1901.
Cheetham, John James	P. G. IIIa	See Evening, 1901.
Collier, John	P. G. IIIa	See Evening, 1899.
Cowdrey, Charles E.	V	Overseer, Talbot Mills, North Billerica, Mass.
Cremin, Daniel J.	Ia	
Donnellan, Frank T.	IIa	Salesman, Butler Bros., Chicago, Ill.
Dudley, George E.	Ia	Stock and Bond Salesman, Harrington & Co., Boston, Mass.

Name	Course	Occupation
Ferguson, Thomas	V	Overseer, Suncook Mills, Suncook, N. H.
Field, Charles W.	VI	Carpenter and Builder, Winter Hill Station, Boston, Mass.
Forrest, Fred G.	IIa	
Fortune, David A.	IIb	Overseer, Lower Pacific Mills, Lawrence, Mass.
Gaunt, Alfred C.	P. G. IIIa	See Evening, 1899.
Good, Henry	Ia	Providence, R. I.
Haigh, Walter	IIIa	
Haworth, Joseph	VI	Travelling Mechanical Engineer, C. G. Sargent's Sons Corp., Graniteville, Mass.
Hogan, James A.	V	Hogan's Market, Lowell, Mass.
Hoyle, Edward	IIb	
Johnson, Ernest A.	IIa-b	Superintendent Finishing Dept., Washington Mills, Lawrence, Mass.
Kelly, Michael H.	Ia	Overseer, Appleton Co., Lowell, Mass.
Kent, Ernest J.	IIb	Section Hand, English Drawing, Lower Pacific Mills, Lawrence, Mass.
Lamont, Walter McL.	IIb	Agent, Wood Worsted Mills, Lawrence, Mass.
Lawliss, Augustine J.	V	Deceased.
Lee, Charles	Ia	Machinist, Saco-Lowell Shops, Lowell, Mass.
Leith, Edwin E.	IIIa	Superintendent, S. Slater & Sons, Inc., Webster, Mass.
Libby, C. Robert	VI	
Molloy, Andrew	V	Foreman, Lowell Water Works, Lowell, Mass.
Nugent, Thomas A.	VI	See Evening, 1899.
Osgood, Charles F.	VI	See Evening, 1900.
Potter, Richard W.	V	Overseer, Weaving, Massachusetts Cotton Mills, Lowell, Mass.
Rockwell, Samuel F.	IIa	Superintendent, Mule Dept., Davis and Furber Machine Co., No. Andover, Mass.
Schermerhorn, George E.	Ia	Superintendent, Chipman Knitting Mills, Easton, Pa.
Smith, William H.	IIb	Stamp Clerk, Post Office, Lawrence, Mass.
Stevenson, William	IIIa	See Evening, 1899.
Stopherd, William H.	VI	See Evening, 1899.
Umpleby, Thomas B.	V	Designer, Stanley Woolen Company, Uxbridge, Mass.
Varney, Manley H.	IIIa	Died January, 1916.
Vogt, Alfred H.	IIIa	Designing Dept., George E. Kunhardt's Mills, Lawrence, Mass.
Walker, David	IIIa	Overseer, Burlington Mills, Winooski, Vt.
Wilson, Calvin E.	IIb	Overseer of Winding, Beacon Mfg. Co., New Bedford, Mass.
Wilson, George H.	IIb	Section Hand, Lower Pacific Mills, Lawrence, Mass.
Wood, Jonathan	Ia	Overseer, Lawrence Mfg. Co., Lowell, Mass.

Day Course, 1903

Diploma Graduates

Name	Course	Occupation
Bloom, Wilfred N.	IV	Manager of Construction, Louis K. Liggett Company, New York City.
Campbell, Orison S.	II	Superintendent, Canadian Consolidated Felt Co., Ltd., Kitchener, Ont.
Chamberlin, Frederick E.	I	Overseer of Spinning, Monument Mills, Housatonic, Mass.
Emerson, Frank W.	II	Agent, Moosup Mills, Moosup, Conn.
Evans, Alfred W.	III	Textile Inspector, Holyoke, Mass.
Evans, William R.	III	Foreman, Durgin Shoe Co., Haverhill, Mass.
Ferguson, Arthur F.	I	
Fuller, George	I	Associate Editor and Fabric Expert, American Wool and Cotton Reporter, New York City.
Gerrish, Walter	III	With American Felt Co., Boston, Mass.
Morrison, Fred C.	I	Assistant Superintendent, Levi W. Phelps, Ayer, Mass.
Najar, G. George	IV	Overseer of Dyeing, Monument Mills, Housatonic, Mass.
Rasche, William A.	III	Deceased.
Snelling, Fred N.	II	With American Express Co., Haverhill, Mass.
Stewart, Walter L.	III	Cotton Goods Converter, Charles Kohlman & Co., Inc., New York City.
Wilson, John S.	II	Manager, Union Square Dept., Germania Life Insurance Co., New York City.

Certificate Holders

Bennett, Edward H.	V	Publisher, F. P. Bennett and Co., Inc., Boston, Mass.
Campbell, Louise P.	IIIb	Designer, Winchester, Mass.
Holgate, Benjamin	V	See Day, 1902.
Hutton, Clarence	III	Technical Editor, Textile World Journal, Boston, Mass.
Petty, George E.	I-V	Quartermaster's Department, Atlanta, Ga.
Pradel, Mrs. Alois J. (Walker, Anna G.)	IIIb	534 South Main St., Woonsocket, R. I.
Reynolds, Isabel H.	III-V	Clerk, Pacific Mills Print Works, Lawrence, Mass.
Robinson, William C.	III-V	Inspector, H. F. Livermore & Co., Boston, Mass.
Spiegel, Edward	V	In theatrical business, New York City.
Stevenson, Murray R.	III-V	Farmer, Princeton Depot, Mass.

Evening Course, 1903

Certificate Holders

Adams, Henry S.	IIa	See Day, 1905.
Balmforth, James H.	IIa	Postal Clerk, P. O., Bloomfield, N. J.
Barry, Edward J.	IIIa	Overseer, Salmon Falls Mfg. Co., Salmon Falls, N. H.

Name	Course	Occupation
Bastow, Henry	IIIa	Textile Inspector, Quartermaster's Department, Cambridge, Mass.
Baxter, Alvah J.	IIa	Cost Clerk, Wood Worsted Mills, Lawrence, Mass.
Byam, Walter S.	VI	Clerk, Saco-Lowell Shops, Lowell, Mass.
Cady, Dennis J.	V	Section Hand, Washington Mills, Lawrence, Mass.
Donnellan, Frank T.	V	See Evening, 1902.
Flynn, John J.	VI	Lieutenant, City of Lowell Fire Dept., Lowell, Mass.
French, Mrs. Irving (Balmforth, Martha)	IIIa	Tewksbury, Mass.
Garner, William	IIIa	Order Clerk and Telegrapher, Warren Bros. Co., East Cambridge, Mass.
Gaunt, Alfred C.	IIa	See Evening, 1899.
Goodchild, George	Ia	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Gray, Finley M.	VI	Clerk, Quartermaster's Department, Boston, Mass.
Higgins, James A.	IIa	
Howard, John	IIIa	See Evening, 1900.
Hunter, Ralph	V	See Evening, 1901.
Jennings, James J.	IIIa	Overseer of Weaving, Jenckes Spinning Co., Pawtucket, R. I.
Johnson, Samuel L.	V	Overseer, Weaving, Walworth Bros., Lawrence, Mass.
Keleher, John J.	IIb	Overseer, Champlain Mills, Winooski, Vt.
Knowles, Frank E.	Ia	Inspector, Factory Mutual Insurance Co., Boston, Mass.
Lawrence, Charles	Ia	
Leach, Joseph W.	V	Designer, Pacific Mills, Lawrence, Mass.
Lincourt, Hector L.	VI	Lynn, Mass.
Lord, Wilfred	IIb	See Evening, 1901.
Mason, Frederick A.	Ia	Second Hand, French Worsted Spinning, Monomac Spinning Co., Lawrence, Mass.
Moir, Alexander L.	P. G. IIIa	Died December, 1914.
Mortenson, Carl W.	IIIa	Died, 1914.
Mozley, Arthur	VI	Deceased.
Myers, James W.	IIIa-IV	Assistant Superintendent, U. S. Bunting Co., Lowell, Mass.
Nicholson, Richard	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Noonan, Denis T.	IIIa	Superintendent, Berkshire Woolen & Worsted Co., Pittsfield, Mass.
Palmer, G. Buel	IIIa	Manager, Cross Awning and Sign Co., Lowell, Mass.
Rockwell, Henry D.	IIa	Clerk, Davis and Furber Machine Co., No. Andover, Mass.
Schofield, John S.	IIIa	Designer, Berkshire Woolen and Worsted Co., Pittsfield, Mass.
Schoon, Fenton	IIb	Section Hand, Worsted Drawing, Farr Alpaca Co., Holyoke, Mass.
Stokham, Burton I.	IV	
Tonge, Matthew	IIIa	Weaver, Dartmouth Mfg. Co., New Bedford, Mass.

Name	Course	Occupation
Upton, Frank A.	Ia	Superintendent, Yarn Dept., Shaw Stocking Co., Lowell, Mass.
Varney, Manley H.	Ia	Died January, 1916.
Walker, David	P. G. IIIa	See Evening, 1902.

Day Course, 1904

Diploma Graduates

Abbot, Edward M.	II	Vice-President and Agent, Abbot Worsted Co., Graniteville, Mass.
Baldwin, Frederick A.	II	Secretary-Treasurer, Walter Blue & Co., Ltd., Sherbrooke, P. Q., Canada.
Clapp, F. Austin	II	Salesman, Dunmore Worsted Co., Inc., New York City.
Clogston, Raymond B.	IV	Overseer of Dyeing, Merrimack Mfg. Co., Lowell, Mass.
Culver, Ralph F.	IV	With Culver Dye Co., Inc., and Drake & Co., Providence, R. I.
Cutler, Benjamin W., Jr.	III	
Dewey, James F.	II	Superintendent, Woolen Mills, A. G. Dewey Co., Quechee, Vt.
Donald, Albert E.	II	Assistant Superintendent, Uxbridge Worsted Co., Uxbridge, Mass.
Jury, Alfred E.	IV	Director, Textile Section, U. S. Rubber Co., New York City.
Lucey, Edmund A.	II	Industrial Engineer, H. L. Gantt, New York City.
MacPherson, Wallace A.	III	Designer, Waskanut Mills, Farnumsville, Mass.
Meadows, William R.	I	Agent, Geo. H. McFadden & Brother of Philadelphia, Milan, Italy.
Stevens, Dexter	I	Manager, Esmond Mills, Esmond, R. I.
Webb, Frank H.	IV	Chemist, Washington Mills, Lawrence, Mass.
White, Royal P.	II	Agent, Stirling Mills, Lowell, Mass.

Certificate Holders

Halsell, Elam R.	I-V	
Horsfall, George G.	II-III-V	Assistant Dyer, Interwoven Mills, Inc., Martinsburg, W. Va.
Jones, Everett A.	III	See Day, 1905.
O'Donnell, John D.	I-V	
O'Hara, William F.	IV	
Parker, Everett N.	I-III-V	See Day, 1905.
Smith, Ralston F.	I	Manager and Secretary, The Cleveland Battery and Electric Company, Cleveland, Ohio.
Toovey, Sidney E.	V	Assistant Manager, S. S. Learnard Co., Boston, Mass.
Wilson, Walter E. H.	I-V	Deceased.

Evening Course, 1904

Certificate Holders

Name	Course	Occupation
Adams, Michael E.	VI	Sales Agent, Bay State Milling Co., Boston, Mass.
Balmforth, James H.	IIa-b	See Evening, 1903.
Balmforth, William F.	VI	District Manager, Newark Star-Eagle, Newark, N. J.
Barker, John P.	V	
Barrington, John A.	IV	With Kalle Color & Chemical Co., New York City.
Boucher, John L.	VI	
Butler, Benjamin O.	VI	
Callahan, Patrick A.	VI	
Cheetham, John Joseph	Ia	Second Hand, Massachusetts Cotton Mills, Lowell, Mass.
Conley, Frederick A.	VI	Picker Expert, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
Connors, Edward F.	VI	Draftsman, Locks and Canals, Lowell, Mass.
Davis, Prentice T.	Ia	Overseer, D. Mackintosh & Sons Co., Holyoke, Mass.
Delmage, Edward R.	IIIa	With Globe Woolen Mills, Utica, N. Y.
Dempsey, John W.	IIa	Photographer, Lowell, Mass.
Donahue, Michael F.	VI	Foreman, Saco-Lowell Shops, Lowell, Mass.
Doole, George L.	VI	Clerk, U. S. Bunting Co., Lowell, Mass.
Dooley, Edward W.	VI	In business, Lowell, Mass.
Duggan, Francis P.	VI	Store Keeper, U. S. Cartridge Co., Lowell, Mass.
Frank, Emil M.	IIIa	Loomfixer, Arlington Mills, Lawrence, Mass.
Gaunt, Alfred C.	IIb	See Evening, 1899.
Hempel, Frank	V	Stock Clerk, Western Electric Co., Boston, Mass.
Higgins, James A.	IIa-b	
Hoyle, Joseph	IIb	Overseer, U. S. Worsted Co., No. Chelmsford, Mass.
Jeannotte, Arthur	VI	Lowell, Mass.
Kershaw, William E.	V	Collector, Lowell Gas Light Co., Lowell, Mass.
Langevin, Felix D.	VI	Assistant Superintendent, Kitson Division, Saco-Lowell Shops, Lowell, Mass.
Lord, Harry D.	IIIa	Selling Agent, Saco-Lowell Shops, Boston, Mass.
Lord, Wilfred	IIa	See Evening, 1901.
McBride, Robert G.	IIa	
Merrill, Edwin C.	VI	Assistant, City Engineer's Office, Lawrence, Mass.
Miller, Emil H	V	Charge of Supply Dept., Lower Pacific Mills, Lawrence, Mass.
Moorehouse, Thomas	VI	Chief Electrician, Eustis Mining Co., Eustis, Canada.
Murphy, John H.	VI	Treasurer, Lowell Morris Plan Co., Lowell, Mass.

Name	Course	Occupation
Notman, Frederick W.	Ia	Clerk, Massachusetts Cotton Mills, Boston, Mass.
Patrick, Alexander	IIIa	Omaha, Neb.
Redman, H. Stewart	IIIa	Assistant Agent, Stark Mills, Manchester, N. H.
Reed, Foster C. K.	VI	Steam Engineer, Farwell Bleachery, Lawrence, Mass.
Rhodes, Joseph E.	V	Chicago, Ill.
Rooney, George W.	Ia	Superintendent, N. H. Spinning Mills Co., Penacook, N. H.
Shaw, James	V	
Smith, Edward	Ia	Overseer, Bourne Mills, Fall River, Mass.
Smith, John W.	IIb	Garage Foreman, Beacon Motor Car Co., Boston, Mass.
Sterling, Walter	IIIa	Second Hand, Kilburn Mills, New Bedford, Mass.
Stokham, Burton I.	P. G. IV	
Tarpey, John F.	IIa	With Merrimack Mfg. Co., Lowell, Mass.
Thompson, Charles B.	VI	U. S. Military Service.
Webb, Francis H.	V	With Hobson & Lawler, Lowell, Mass.

Day Course, 1905

Diploma Graduates

Adams, Henry S.	I	Treasurer and Secretary, The Springsstein Mills, Chester, S. C.
Boyd, George A.	I	Accountant, Harmony Mills, Boston, Mass.
Carr, George E.	I	Bridgeport, Conn.
Cole, James T.	II	Superintendent, Industrial Dept., Mass. Commission for Adult Blind, Cambridge, Mass.
Dillon, James H.	III	Landscape and Architectural Designer, Park and Recreation Dept., Boston, Mass.
Harris, Charles E.	I	Harris Garage and Machine Co., East-hampton, Mass.
Hollings, James L.	I	With W. R. Grace and Company, New York City.
Hook, Russell W.	IV	Chemist, Arthur D. Little, Inc., Boston, Mass.
Jones, Everett A.	III	Superintendent, Nye and Wait Kilmar-nock Corporation, Auburn, N. Y.
Lewis, Walter S.	IV	First Lieutenant, Ordnance Dept., Wash-ington, D. C.
McKenna, Hugh F.	IV	Chemist, United Indigo and Chemical Co., Ltd., Chicago, Ill.
Midwood, Arnold J.	IV	Salesman, I. Levinstein and Company, Boston, Mass.
Moore, Everett B.	I	Manager and Buyer, Chadbourne and Moore, Chelsea, Mass.
Parker, Everett N.	I	Manufacturer, Parker Spool and Bobbin Company, Lewiston, Me.
Thompson, Everett L.	I	Salesman, S. F. Bowser & Co., Inc., Brad-ford, Mass.

Name	Course	Occupation
Warren, Philip H.	II	Superintendent, Hopeville Mfg. Co., Worcester, Mass.
Wheelock, Stanley H.	II	Superintendent and Assistant Treasurer, Stanley Woolen Company, Uxbridge, Mass.

Certificate Holders

Arundale, Henry B.	II-III-V	See Day, 1907.
Conklin, Jennie G.	IIIb	Commercial Artist, Boston, Mass.
Curtis, William L.	II	
Hunt, Chester L.	III	With Waltham Watch Company, Waltham, Mass.
Lee, William H.	V	Treasurer, Lee's Wool Shop, Holyoke, Mass.
Roberson, Pat H.	I	Merchant, James R. Roberson and Sons, Cropwell, Ala.
Roberts, Carrie I.	IIIb	Designer, Lowell, Mass.
Thomas, Roland V.	I	
Wright, Edward, Jr.	II	Assistant Engineer, Massachusetts State Board of Health, Boston, Mass.

Evening Course, 1905

Certificate Holders

Bake, Herbert	IIIa	With Peabody & Sons, Lawrence, Mass.
Bastow, Henry	V	See Evening, 1903.
Bell, Frederick W.	IIa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Bowie, Samuel A.	VI	Lawrence, Mass.
Brown, James P.	IIIa	Lowell, Mass.
Bryant, Ernest L.	VI	Clerk, C. A. Templeton, Inc., Waterbury Conn.
Burke, Thomas F.	Ia	Treasurer, Barber Mfg. Co., Lowell, Mass.
Burns, Edward J.	IV	Foreman, Testing Dept., U. S. Cartridge Company, Lowell, Mass.
Burns, James E.	IV	Overseer, Testing Dept., U. S. Cartridge Co., Lowell, Mass.
Caron, Cleophas	Ia	Burlington, Vt.
Collins, John A.	IIa-b	Secretary, Mutual Boiler Insurance Company, Boston, Mass.
Cook, Cheney E.	IIIa	With Winslow Brothers and Smith Company, Boston, Mass.
Custer, James J. E.	V	Letter Carrier, Lowell, Mass.
Dana, Clarence A.	VI	Chief Draftsman, Saco-Lowell Shops, Lowell, Mass.
Dick, Hugo P.	IIIa	Designer, Merrimack Mfg. Co., Lowell, Mass.
Dimlick, Benjamin C.	IIIa	Deceased.
Erbe, Gustave	VI	Foreman Machinist, J. L. Thomson Mfg. Company, Waltham, Mass.
Foster, Sherwood L.	Ia	Lowell, Mass.
French, Ernest J.	Ia	Farm Superintendent, Bucking Burro Farm, Cornish, N. H.
Gay, Earle B.	Ia	

Name	Course	Occupation
Goodchild, George	VI	See Evening, 1903.
Harder, Elmer E.	VI	Janitor, Charles W. Morey School, Lowell, Mass.
Haven, George W.	IIIa	Of Blake and Stearns, Boston, Mass.
Howard, Thomas	V	Overseer, T. Martin and Bro. Mfg. Co., Lowell, Mass.
Hunt, Herbert R.	VI	
Hunton, Lewis G.	IV	U. S. Military Service.
Kenworthy, Joseph	Ia	Died 1916.
Kimball, Irving D.	VI	Cost Department, Saco-Lowell Shops, Lowell, Mass.
Lamson, George F.	VI	See Day, 1900
Linkletter, Alfred C.	VI	With International Steel and Ordnance Co., Lowell, Mass.
Lovell, Charles E.	VI	Los Angeles, Cal.
McManus, Hugh	V	
Maguire, James H.	VI	General Foreman, Saco-Lowell Shops, Lowell, Mass.
Martin, John C., Jr.	IIa-b	Died March 10, 1913.
Molloy, Andrew	IIIa	See Evening, 1902.
O'Neill, Peter F.	IV	Superintendent, Standard Processing Co., Chattanooga, Tenn.
Overend, John	V	With John and James Dobson, Philadelphia, Pa.
Redman, H. Stewart	V	See Evening, 1904.
Silk, Frederick C. M.	IV	Lowell, Mass.
Simola, Emil J.	IIa-b	Finland.
Skinner, Clarence W.	IIIa	With Brightwood Mfg. Co., No. Andover, Mass.
Smith, Arthur	IIIa	Designer, Pemberton Mills, Lawrence, Mass.
Smith, George A.	IIIa	Overseer, Ludlow Manufacturing Associates, Ludlow, Mass.
Smith, William E.	IIIa	Clerk, Kennedy & Co., Lawrence, Mass.
Stevens, Frank W.	VI	Inspector, Associated Factory Mutual Insurance Co., Boston, Mass.
Stopherd, William H.	IIIa	See Evening, 1899.
Tonge, John	IV	Salesman, Holliday-Kemp Co., Inc., Boston, Mass.
Wilde, Thomas E.	IIa	Proprietor, Jeremiah Clark Machinery Co., Lowell, Mass.
Wiswall, Frank T.	V	U. S. Military Service.

Day Course, 1906

Diploma Graduates

Avery, Charles H.	II	Died January, 1913.
Bradford, Roy H.	II	Assistant Superintendent, Flax Mill, Smith and Dove Mfg. Company, Andover, Mass.
Churchill, Charles W.	III	Lowell, Mass.
Cole, Edward E.	IV	Reporter, Bradstreet Co., Haverhill, Mass.
Currier, Herbert A.	I	New York Manager, Cotton Yarn Dept., William Whitman & Co., Inc., New York City.

Name	Course	Occupation
Curtis, Frank M.	I	Manager, Wm. Curtis Sons Co., Milton, Mass.
Fleming, Frank E.	IV	Asst. Dyer and Finisher, Goodall Worsted Co., Sanford, Me.
Gahm, George L.	II	Superintendent, Yarn Department, Wood Worsted Mills, Lawrence, Mass.
Hennigan, Arthur J.	II	New England Representative, Cox & Schreiber, Boston, Mass.
Swan, Guy C.	II	Chemist, U. S. Food Research Laboratory, Philadelphia, Pa.
Varnum, Arthur C.	II	Superintendent, Stirling Mills, Lowell, Mass.
Wightman, William H.	IV	Salesman, U. S. Color and Chemical Company, Boston, Mass.
Wood, Herbert C.	I	Assistant Superintendent, Union Wadding Co., Pawtucket, R. I.

Certificate Holders

Church, Charles R.	II-V	Camp Physical Director, Army Y. M. C. A., San Diego, Calif.
Gillon, Sara A.	IIIb	Designer, Lowell, Mass.
Hildreth, Harold W.	II-V	See Day, 1907.
Hintze, Thomas F.	I	
Kent, Clarence L.	III-V	Salesman and Assistant Special Agent, Standard Oil Co., No. Andover, Mass.
Lane, John W.	I	With Illinois Railroad, Chicago, Ill.
McDonnell, William H.	I-V	Lawyer, McDonnell, Drew & White, Boston, Mass.
Newcomb, Guy H.	IV	Assistant Manager, Kuttroff, Pickhardt & Co., Chicago, Ill.
Reynolds, Isabel H.	P. G. III-V	See Day, 1903.
Stohn, Alexander C.	III-V	Mill Manager, C. Stohn, Hyde Park, Mass.
Woodruff, Charles B.	V	Buyer, Sharp & Co., Inc., Birmingham, Ala.

Evening Course, 1906

Certificate Holders

Abbott, Paul W.	Ia	Chief Inspector, Lincoln Motor Co., Detroit, Mich.
Amiot, Louis H.	Va	With American Hide and Leather Co., Lowell, Mass.
Armstrong, Elias B.	IIb	Agent, Hamilton Woolen Co., Southbridge, Mass.
Bake, Herbert	P. G. IIIa	See Evening, 1905.
Brouder, John J.	IIIa	Designer, Ayer Mills, Lawrence, Mass.
Brown, James P.	P. G. IIIa	See Evening, 1905.
Brown, William G.	IIb	Wool Buyer, Quitman, Ga.
Burgess, Joseph H.	Va	Loomfixer, Arlington Mills, Lawrence, Mass.
Burnham, Joseph W.	IIIa	Works Inspector, Equipment Division, Ordnance Dept., Washington, D. C.
Burnham, Wilmont V.	Vb	Lawrence, Mass.

Name	Course	Occupation
Dick, Hugo P.	P. G. IIIa	See Evening, 1905.
Dickson, Andrew	IIa	
Dimlick, Benjamin C.	P. G. IIIa	Deceased.
Dodge, Frank	Ia	Overseer, Hamilton Mfg. Co., Lowell, Mass.
Duce, Benjamin	IIIa	Overseer, Weaving, Ayer Mills, Lawrence, Mass.
Ellis, George W.	VII	Superintendent, A. D. Ellis & Sons, Monson, Mass.
Eyers, John T.	IV	
Frank, Emil M.	P. G. IIIa	See Evening, 1904
Fulton, John McC.	V	Lowell Bleachery, Lowell, Mass.
Gregson, Robert B	Va	Foreman, American Optical Co., South-bridge, Mass.
Haigh, William	Vb	
Hartwell, Henry E	VI	Doctor, Lawrence, Mass.
Hoessler, Carl	IIIa	Overseer, Weaving, M. T. Stevens & Son, No. Andover, Mass.
Howard, John	IIa	See Evening, 1900.
Hutton, Harold	V	
Hutton, John M.	Vb	
Inberg, Magnus	Ia	Finland.
Johnson, Ernest A.	V	See Evening, 1902.
Kidd, Thomas E.	IV	Overseer of Dyeing, Niantic Mfg. Co., East Lyme, Conn.
Laffert, August W.	IIIa	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
McCarthy, Joseph F.	IIIa	Cloth Examiner, Wood Worsted Mills, Lawrence, Mass.
McLaughlin, Peter J.	Ia	Second Hand, Massachusetts Cotton Mills, Lowell, Mass.
McLay, John	Vb	Superintendent, Worsted Mill, Globe Mills, Utica, N. Y.
Maguire, James H.	Ia	See Evening, 1905.
Michelmores, Harry	IIIa	Assistant Designer, Brightwood Mfg. Co., No. Andover, Mass.
Molloy, Andrew	P. G. IIIa	See Evening, 1902.
Morton, Albert N.	IIb	Of Morton & Andrews, Lowell, Mass.
Murphy, Cornelius D.	IIa	Proprietor, Belvidere Grocery, Savannah, Ga.
Nelson, Ernest H.	IIIa	See Evening, 1900.
O'Brien, David A.	IV	Salesman, Frederick Stearns & Company of Detroit, New York City.
Pedler, William A.	Ia	Agent, Arlington Mills, Lawrence, Mass.
Pihl, C. Edward	VI	Master Mechanic and Chief Engineer, Queen City Cotton Co., Burlington, Vt.
Pittendreigh, John M.	Ia	Erector, Saco-Lowell Shops, Charlotte, N. C.
Reardon, Timothy H.	VI	Instructor, Industrial School, Lowell, Mass.
Reynolds, Eugene A.	VI	With Lawrence Mfg. Co., Lowell, Mass.
Richards, Francis G.	IIa	Linotype Operator, Brockton Enterprise, Brockton, Mass.
Rushworth, Walter	VI	Electrician, U. S. Navy Yard, Boston, Mass.
Schubert, George J.	V	Second Hand, Pemberton Co., Lawrence, Mass.

Name	Course	Occupation
Senior, George	Va	
Sharpe, John R.	VI	Overseer, Saco-Lowell Shops, Lowell, Mass.
Sheppard, Byron H.	VJ	Architect and Engineer, Providence, R. I.
Silk, Patrick E.	VII	Overseer of Finishing, Auburn Woolen Mill, Auburn, N. Y.
Skinner, Clarence W.	P. G. IIIa	See Evening, 1905.
Smith, Arthur	P. G. IIIa	See Evening, 1905.
	Va	
Smith, George A.	P. G. IIIa	See Evening, 1905.
Smith, William E.	P. G. IIIa	See Evening, 1905.
Stopherd, William H.	P. G. IIIa	See Evening, 1899.
Vogt, Harry A.	Vb	Died Feb. 22, 1910.
Walker, William, Jr.	VII	Superintendent, Ottaquechee Woolen Co., No. Hartland, Vt.
Ward, James J.	VII	With U. S. Cartridge Co., Lowell, Mass.
Whitcomb, Harry E.	Ia	Deceased.

Day Course, 1907

Diploma Graduates

Arundale, Henry B.	II	With U. S. Conditioning and Testing Company, New York City.
Coman, James G.	I	Superintendent and Buyer, Tipton Cotton Mills, Covington, Tenn.
Craig, Albert W.	IV	In Laboratory, Pacific Mills, Lawrence, Mass.
Farmer, Chester J.	IV	Professor of Chemistry, Marquette Medical School, Milwaukee, Wis.
Haskell, Spencer H.	II	U. S. Military Service.
Hathorn, George W.	IV	Chemist, Lawrence Gas Co., Lawrence, Mass.
Hildreth, Harold W.	II	U. S. Military Service.
Hoyt, Charles W. H.	IV	
Knowland, Daniel P.	IV	Chemist, Geigy Company, New York City.
Mackay, Stewart	III	Instructor, Textile Design and Cloth Analysis, Lowell Textile School, Lowell, Mass.
Merriman, Earl C.	II	With Samson Cordage Works, Shirley, Mass.
Raymond, Charles A.	IV	Assistant Superintendent, N. E. Fuel and Transportation Company, Everett, Mass.
Storer, Francis E.	II	Cashier, Windham County National Bank, Danielson, Conn.
Stursberg, Paul W.	II	Died 1913.
Woodcock, Eugene C.	II	Manufacturing Superintendent, Chelsea Fibre Mills, Brooklyn, N. Y.

Certificate Holders

Brannen, Leon V.	III-V	Philadelphia, Pa.
Ehrenfried, Jacob B.	II-V	With George Ehrenfried Co., Lewiston, Me.
Lane, John W.	I-V	See Day, 1906.
Parker, Mrs. Herbert L. (Meek, Lotta L.)	IIIb	4 Prookside Circle, Auburn, Me.

Evening Course, 1907

Certificate Holders		
Name	Course	Occupation
Ackroyd, Theodore C.	I Ib	Arlington Mills, Lawrence, Mass.
Bain, William A.	V II	Dyer, Oakland Mills, Oakland, Me.
Bake, Herbert	V II	See Evening, 1905.
Ballinger, Frederick W.	I Ib	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
Barber, James E.	I Ib	Died April 20, 1918.
Barraclough, John C.	I a	Foreman, Arlington Mills, Lawrence, Mass.
Bastow, Stephen W.	I V	Overseer, Dyeing and Bleaching, Nashua Mfg. Co., Nashua, N. H.
Bayard, Pierre P.	III a	Adjutant, 351 Regiment d'Infanterie, France.
Begen, Thomas W.	I Ib	Overseer, Washington Mills, Lawrence, Mass.
Benoit, William A.	V a	Second Hand, Everett Mills, Lawrence, Mass.
Bouille, Arthur L.	V b	Loomfixer, Washington Mills, Lawrence, Mass.
Brannen, Leon V.	II a	See Day, 1907.
Brouder, John J.	V II	See Evening, 1906.
Bucklitsch, Gustave J.	I Ib	Overseer of Combing, Washington Mills, Lawrence, Mass.
Burgess, Joseph H.	V b	See Evening, 1906.
Butterworth, Charles A.	V a	Office Assistant, Suncook Mills, Suncook, N. H.
Butterworth, John A.	I Ib	U. S. Military Service.
Carden, Francis E.	I Ib	Deceased.
Carlson, Ernest B.	I Ib	Assistant Superintendent, Columbian Rope Co., Auburn, N. Y.
Dick, Hugo P.	I Ib	See Evening, 1905.
Dobbs, William	I Ib	Second Hand, Massachusetts Mohair Plush Co., Lowell, Mass.
Dodge, Charles P.	II a	Machinist, C. S. Dodge, Lowell, Mass.
Duce, Benjamin	V II	See Evening, 1906.
Flint, Leon G.	III a	Finished Percher, Washington Mills, Lawrence, Mass.
Frechette, Alphonse J.	I Ib	Clerk, W. Gendron, Lawrence, Mass.
Gillespie, James E.	V II	With Ayer Mills, Lawrence, Mass.
Gregson, Robert B.	I a-Vc	See Evening, 1906.
Haartz, John C.	V II	President and Treasurer, J. C. Haartz, Inc., Boston, Mass.
Haas, Ignatius	I a	
Hamblett, Harry A.	I a	Overseer, Merrimack Mfg. Co., Lowell, Mass.
Hanglin, Albert J.	I V	
Hanglin, William E.	V b	
Hebert, Charles L. J.	I V	Fixer, U. S. Cartridge Co., Lowell, Mass.
Hitchen, H. Scott	V b	
Hitchen, Thomas G.	V b	
Howard, John	V II	See Evening, 1900.
Ignatius, Pentti	V a	Finland.
Jepson, Harry	V b	
Kelly, Michael H.	III a	See Evening, 1902.

Name	Course	Occupation
Kirsch, Alfred O.	Vb	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
Laffert, August W.	VII	See Evening, 1906.
Lake, William F.	IIIa	Overseer, Middlesex Co., Lowell, Mass.
Marjerison, T. Sydney	IIIa	Poultry Farmer, Salem, N. H.
Martin, Willard E.	IIIa	Wholesale Small Wares, Somerville, Mass.
Michelmores, Harry	VII	See Evening, 1906.
Myers, James W.	VII	See Evening, 1903.
Nelson, Charles E.	IIb	Electrician, Bay State Street Railway Co., Lowell, Mass.
O'Brien, Michael F.	IIb	Lowell, Mass.
Porter, George K., Jr.	IIIa	Salesman, Wellington, Sears & Co., San Francisco, Calif.
Read, Paul A.	VII	Superintendent, Seaconnet Mills, Fall River, Mass.
Redman, H. Stewart	Ia	See Evening, 1904.
Ritter, Alfred E.	IIb	Died December 12, 1913.
Robbins, John	IIb	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
Senior, George	Ia-Vc	See Evening, 1906.
Skinner, Clarence W.	VII	See Evening, 1905.
Smith, Arthur	Vc	See Evening, 1905.
Smith, Ernest B.	Vb	With U. S. Worsted Co., Lawrence, Mass.
Smith, James	Vb	
Smith, Percy H.	Vb	Washington Mills, Lawrence, Mass.
Smith, William E.	VII	See Evening, 1905.
Varnum, Arthur C.	Vb	See Day, 1906.
Wahlberg, Einar S.	Ia	
Waterworth, Frank W.	Vb	Overseer, Ayer Mills, Lawrence, Mass.
Webb, Francis H.	IIIa	See Evening 1904.
Webber, John F.	IIIa	
Whittaker, Thomas B.	IIb	Bookkeeper, Quidnick-Windham Mfg. Co., Providence, R. I.
Wiggin, Leon M.	IIIa	Designer, U. S. Bunting Co., Lowell, Mass.
Wolf, William C.	Va	Loomfixer, Pacific Mills, Lawrence, Mass.
Wolger, John J.	IIIa	Loomfixer, Pacific Mills, Lawrence, Mass.
Yare, John F.	Vb	

Day Course, 1908

	Diploma	Graduates
Abbott, George R.	II	Andover, Mass.
Ballard, Horace W. C. S.	IV	Chemist and Overseer of Dyeing, Felters Co., Millbury, Mass.
Dwight, John F., Jr.	II	Market Gardener, Holliston, Mass.
Farr, Leonard S.	II	Overseer, Farr Alpaca Co., Holyoke, Mass.
Gay, Olin D.	II	Superintendent, Gay Bros. Co., Cavendish, Vt.
Hadley, Walter E.	IV	Chief Chemist, The Clark Thread Company, Newark, N. J.
Huising, Geronimo H.	I	Farmer, San Jose Estate and Mindoro Co., San Jose, Mindoro, P. I.
Jenckes, Leland A.	VI	Deceased.
Lewis, LeRoy C.	IV	Raw Silk Inspector, Wilkes-Barre Silk Company, Paterson, N. J.

Name	Course	Occupation
Mailey, Howard T.	II	Assistant Superintendent, Worsted Dept., Pacific Mills, Lawrence, Mass.
Perkins, J. Dean	III	Overseer, Worsted Dressing, Amoskeag Mfg. Co., Manchester, N. H.
Prince, Sylvanus C.	VI	
Proctor, Braman	IV	Dyestuff Salesman, Kuttroff, Pickhardt & Company, Inc., Boston, Mass.
Reynolds, Fred B.	II	Purchasing Agent, M. T. Stevens and Sons Co., No. Andover, Mass.
Robinson, Ernest W.	IV	Superintendent, Belding Bros. & Co., Rockville, Conn.
Weinz, W. Elliot	IV	New York Manager, Essex Aniline Works, Inc., Boston, Mass.
Wingate, William H.	IV	Chemist, Sidney Blumenthal and Co., Shelton, Conn.

Evening Course, 1908

Certificate Holders

Arnold, Warren H.	VII	Overseer, Weaving, Kent Mfg. Co., Clifton Heights, Pa.
Barrington, James L.	IV	With Kalle Color and Chemical Co., Boston, Mass.
Begen, Thomas W.	IIb	See Evening, 1907.
Berry, Alfred H.	VI	Electrical Engineer, Silesia Worsted Mills, No. Chelmsford, Mass.
Broadbent, James H.	Vb	With U. S. Bunting Co., Lowell, Mass.
Broadbent, William	Vb	With Talbot Mills, No. Billerica, Mass.
Brown, James T.	IIIa	Section Hand, Wood Worsted Mills, Lawrence, Mass.
Buckley, Harry	IV	Agent's Assistant, Acadia Mills, Lawrence, Mass.
Campbell, Archibald	IV	Foreman, United Drug Laboratories, Boston, Mass.
Carden, Francis E.	IIb	Deceased.
Carney, William J.	Ia	Section Hand, Arlington Mills, Lawrence, Mass.
Carter, Charles R.	Vb	Sexton, Grace Church, Lawrence, Mass.
Corr, Eben W.	Vb	Civil Engineer, Texas Water Works, Waco, Texas.
Corr, James F.	Vb	Loomfixer, Bay State Mills, Lowell, Mass.
Craven, Harry	VII	Clerk, Pacific Mills, Lawrence, Mass.
Dick, Hugo P.	Vb	See Evening, 1905.
Dixon, Arthur	IIIa	Assistant Overseer, Arlington Mills, Lawrence, Mass.
Dobbs, William	IIb	See Evening, 1907.
Dunn, George C.	IIIa	Paymaster, Saunders Cotton Mills, Saundersville, Mass.
Flynn, William J.	Vb	Lowell, Mass.
Greenhalge, James	Vc	Overseer, Jackson Mfg. Co., Nashua, N. H.
Hallbauer, William R.	Vb	Lawrence, Mass.
Hanson, Edward	IIIa	Overseer, Lowell Bleachery, Lowell, Mass.
Hardman, David B.	IV	Machine Printer, Lowell, Mass.
Harris, Louis	VII	Clothing Designer, J. Peavey and Brothers, Boston, Mass.

Name	Course	Occupation
Hennessey, Ambrose M.	VII	Inspector of Transformers, General Electric Co., Pittsfield, Mass.
Hill, Harold	Ia	Section Hand, Arlington Mills, Lawrence, Mass.
Hoellrich, Martin J.	Vb	Instructor, Weaving, Lowell Textile School, Lowell, Mass.
Ingham, Benjamin W.	Ia	Machinist, U. S. Cartridge Co., Lowell, Mass.
Lagerbald, Jarl	VII	Finland.
Lake, William F.	P. G. IIIa	See Evening, 1907.
McGill, William E.	VII	Hartland, Me.
McGovern, James	VII	Died April 24, 1911.
McKenna, Jerimiah J.	Vb	With Merrimack Woolen Co., Dracut, Mass.
Maker, Isaac A.	Ia	Draftsman, Lawrence Mfg. Co., Lowell, Mass.
Marjerison, T. Sydney	P. G. IIIa	See Evening, 1907.
Marshall, Fred K. R.	VI	Storage Battery Engineer, C. I. Alexander & Sons, Lawrence, Mass.
Mortenson, Carl W.	IIa	Died 1914.
Nutter, James R.	VI	Lowell, Mass.
Osbeck, William J.	IIIa	Deceased.
Patterson, Alfred H.	IIIa	Clerk, Lower Pacific Mills, Lawrence, Mass.
Perkins, Thomas	Ia	Superintendent, Sanford Mills, Reading, Mass.
Picken, William T.	IIIa	Purchasing Agent and Paymaster, Silesia Worsted Mills, No. Chelmsford, Mass.
Plumer, Paul T.	Vb	Cloth Inspector, U. S. Bunting Co., Lowell, Mass.
Porter, George K., Jr.	P. G. IIIa	See Evening, 1907.
Preble, George A.	IIIa	Designer, Massachusetts Cotton Mills, Lowell, Mass.
Saalfrank, Joseph C.	IIIa	Purchasing Agent, Arlington Mills, Lawrence, Mass.
Scally, Edward	VI	Baker, Lowell, Mass.
Schermerhorn, George E.	Va	See Evening, 1902.
Schuster, William F.	VII	Second Hand, Washington Mills, Lawrence, Mass.
Seddon, N. Graham	IIIa	Superintendent, Commonwealth Mfg. Co., Brooklyn, N. Y.
Semple, Alexander	IIIa	Cost Accountant, U. S. Cartridge Co., Lowell, Mass.
Shackleton, J. Henry	IV	Overseer, Dyeing, Pemberton Mills, Lawrence, Mass.
Simoneau, Verner W.	VI	Died July 16, 1917.
Spurr, Albert R.	VII	Overseer, Atlantic Mills, Olneyville, R. I.
Spurr, James H.	IV	Bacteriologist, State Board of Health Experimental Station, Lawrence, Mass.
Stewart, Charles	Va	
Teichmann, Alfred A.	Vb	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
Tucker, John T.	Ia	Clerk, Saco-Lowell Shops, Lowell, Mass.
Varnum, Arthur C.	P. G. IIIa	See Day, 1906.
Webber, John F.	P. G. IIIa	
Whittaker, Thomas B.	IIb	See Evening, 1907.
Wiggin, Leon M.	P. G. IIIa	See Evening, 1907.

Name	Course	Occupation
Willgeroth, Henry J.	IIIa	In business, Hillsboro Dairy Co., Hillsboro, N. H.
Wilmot, Joseph	IIIa	Assistant Superintendent, Bay State Cotton Corporation, Lowell, Mass.
Wolf, William C.	Vb	See Evening, 1907.
Wood, Jonathan	Va	See Evening, 1902.
Young, Richard, Jr.	Va	With Heinze Electric Co., Lowell, Mass.

Day Course, 1909

Diploma Graduates

Brainerd, Arthur T.	IV	Western Representative, H. A. Metz & Co., Chicago, Ill.
Conant, Harold W.	I	Assistant Manager, Conant, Houghton & Co., Littleton, Mass.
Fairbanks, Almonte H.	II	Treasurer and General Manager, Middlesex Knitting Co., Wakefield, Mass.
Ferguson, William G.	III	In charge of Efficiency Dept., Ludlow Mfg. Associates, Ludlow, Mass.
Fiske, Starr H.	II	Designer, D. Goff & Son, Pawtucket, R. I.
Gyzander, Arne K.	IV	
Holden, Francis C.	IV	Chemist and Dyer, Chelsea Fibre Mills, Brooklyn, N. Y.
Kay, Harry P.	II	With Richard L. Wallace & Co., Philadelphia, Pa.
Laughlin, James K.	III	Assistant to Superintendent, Saxonville Mills, Saxonville, Mass.
Levi, Alfred S.	IV	Assistant Superintendent, Liondale Bleach, Dye and Print Works, Rockaway, N. J.
Mason, Archibald L.	VI	
Mullen, Arthur T.	II	Designer, Sutton's Mills, No. Andover, Mass.
Newall, J. Douglas	IV	Manager, Easton Finishing Co., Easton, Pa.
Parkis, William L.	I	Investigator, Cheney Bros., So. Manchester, Conn.
Pease, Chester C.	I	Superintendent of Manufacturing, U. S. Rubber Co., (Textile Section), Newark, N. J.
Potter, Carl H.	I	With Brighton Mills, Passaic, N. J.
Prescott, Walker F.	IV	Gas Defense Service, Washington, D. C.
Saunders, Harold F.	IV	Chemist, Pacific Mills, Lawrence, Mass.
Stone, Ira A.	IV	President and General Manager, American Waste Company, Inc., Boston, Mass.
Wood, J. Carleton	IV	Chemist and Fabric Expert, Brunswick, Balke, Collender Company, Muskegon, Mich.

Evening Course, 1909

Certificate Holders

Anderson, Carl A.	IV	Machinist, Mead & Morrison, Boston, Mass.
Arnold, Warren H.	IIIa	See Evening, 1908.
Bailey, Rothwell	Va	
Bake, Herbert	P. G. IIIa	See Evening, 1905.

Name	Course	Occupation
Banks, Jonas	Va	Supervisor of Weaving, Boott Mills, Lowell, Mass.
Barr, Mrs. John E. (Butler, Elizabeth M.)	IIIb	178 First St., Lowell, Mass.
Benoit, Benjamin L.	VIIb	Clerk, Bay State Cotton Corporation, Lowell, Mass.
Booth, Arthur	IIIa	Overseer, Bates Mfg. Co., Lewiston, Me.
Bowen, Herbert E.	IIIa	Overseer of Knitting, Ipswich Mills, Ipswich, Mass.
Buckley, Richard A.	Vb	Time Recorder, U. S. Cartridge Co., Lowell, Mass.
Bunce, Raymond H.	Vb	Salesman, American Woolen Co., New York, N. Y.
Carman, William	Va	Loomfixer, Merrimack Mfg. Co., Lowell, Mass.
Chesworth, Frank K.	Va	
Cockell, Frederick H.	IIIa	Superintendent, College Poultry Farm, Massachusetts Agricultural College, Amherst, Mass.
Cowdrey, Charles E.	Vb	See Evening, 1902.
Davison, Frank L.	Vb	Loomfixer, Talbot Mills, No. Billerica, Mass.
Dulligan, Charles E.	VIa	Overseer, U. S. Cartridge Co., Lowell, Mass.
Dunning, Carlos W.	VIIb	Second Hand, Appleton Co., Lowell, Mass.
Gaunt, Ernest H.	IIIa	Secretary and Treasurer, Optical Manufacturers' Association, Providence, R. I.
Gilinson, Philip J.	VIa	Experimental Work, Heinze Electric Co., Lowell, Mass.
Gordon, Herbert E.	IIIa	Clerk, Arlington Mills, Lawrence, Mass.
Hanson, Edward	P. G. IIIa	See Evening, 1908.
Hayes, Michael C.	IIa	In business, No. Billerica, Mass.
Hill, Harold	Va	See Evening, 1908.
Hillier, Arthur P.	IIb	Night Superintendent, Silesia Worsted Mills, No. Chelmsford, Mass.
Hodgkins, Albert A.	VII	Superintendent of Narrow Fabrics, A. & E. Henkels, Bridgeport, Conn.
Holt, Harry C.	VIa	
Houston, William I.	IIIa	
Howell, Edward A.	Va	Loomfixer, Pemberton Mills, Lawrence, Mass.
Joyce, John	Vc	
Kaler, Harold F.	VIIb	Assistant Foreman, General Electric Co., West Lynn, Mass.
Kelley, Bernard J., Jr.	VIc	U. S. Military Service.
Kershaw, Benn	Va	Overseer, Boott Mills, Lowell, Mass.
Lincourt, Henry E.	VIIb	
McClure, Charles G.	VIIb	Machinist, The Lamson Co., Lowell, Mass.
McLay, John	IIb	See Evening, 1906.
Madden, Peter	Va	In Business, Lowell, Mass.
Mahoney, Dennis J.	Vb	Postal Clerk, No. Billerica, Mass.
Molloy, Andrew	P. G. IIIa	See Evening, 1902.
Musard, Albert E., Jr.	Vc	Foreman, Remington Arms and Ammunition, Bridgeport, Conn.
Nelson, Ernest H.	Ia	See Evening, 1900.

Name	Course	Occupation
Orrell, Frank L.	VIIb	Overseer, Massachusetts Mohair Plush Co., Lowell, Mass.
Palmer, G. Buel	Vb	See Evening, 1903.
Paquin, Joseph	VIa	Reported missing from the front October 26, 1917.
Parsons, Joseph G.	IIIa	With Thos. Kitson & Son, Stroudsburg, Pa.
Pearson, Fred	VIa	
Read, Paul A.	Va	See Evening, 1907.
Robinson, Thomas	Ia	Overseer, Jenckes Spinning Co., Pawtucket, R. I.
Ryan, Edward P.	Ia	
Schubert, George J.	IIIa	See Evening, 1906.
Schuerfeld, Harry W.	IIIa	Salesman, Sparrow-Chisholm & Co., Boston, Mass.
Smith, Arthur	P. G. IIIa	See Evening, 1905.
Smith, George A.	VII	See Evening, 1905.
Smith, William E.	P. G. IIIa	See Evening, 1905.
Stocks, Carl W.	VIa	Statistician, American Electric Railway Assn., New York City.
Stopherd, William H.	P. G. IIIa	See Evening, 1899.
Sullivan, Humphrey F.	Ia	Deceased.
Sykes, Alvin E.	VIa	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Tucker, John T.	Va	See Evening, 1908.
Varnum, Arthur C.	VII	See Day, 1906.
Vogt, Alfred H.	IIb	See Evening, 1902.
Walsh, Michael L.	Ia	
Ware, Edward W.	IIIa	With Wellington, Sears & Co., Boston, Mass.
Watson, Luther F.	IIb	Assistant Paymaster, Arlington Mills, Lawrence, Mass.
Weigel, Frederick A.	VIIb	Student, New Hampshire College, Durham, N. H.
Young, Richard, Jr.	Vc	See Evening, 1908.

Day Course, 1910

Diploma Graduates

Arienti, Peter J.	IV	Chief Chemist, Eddystone Manufacturing Company, Eddystone, Pa.
Cary, Julian C.	VI	Resident Manager for Connecticut, American Mutual Liability Insurance Co., Hartford, Conn.
Clark, Thomas T.	II	Assistant Manager and Treasurer, Talbot Mills, No. Billerica, Mass.
Duval, Joseph E.	II	Philadelphia Representative, A. N. Briggs Company of Boston, Philadelphia, Pa.
Finlay, Harry F.	IV	Chemist, American Dyewood Co., New York City.
Fletcher, Roland H.	VI	U. S. Military Service.
Gale, Harry L.	III	Manager, Fancy Goods Dept., Wilmerding & Bissett, New York City.
Goldberg, George	VI	Draftsman, Watertown Arsenal, Watertown, Mass.
Hardy, Philip L.	VI	Contractor, Andover, Mass.
Howe, Woodbury K.	I	Assistant Superintendent, Massachusetts Cotton Mills, Lowell, Mass.

Name	Course	Occupation
Hurtado, Leopoldo, Jr.	VI	General Manager, Hurtado and Co., Uruapan, Mich., Mexico.
Jelleme, William O.	I	Technical Superintendent, Brighton Mills, Passaic, N. J.
Keough, Wesley L.	II	U. S. Military Service.
Lamb, Arthur F.	II	Manager, Rockland Cleaning & Dyeing Co., Rockland, Me.
McCool, Frank L.	IV	U. S. Military Service.
Manning, Frederick D.	IV	First Lieutenant, Ordnance Dept., Washington, D. C.
Murray, James A.	II	With Talbot Clothing Co., Boston, Mass.
Nichols, Raymond E.	VI	Superintendent, Lowell Bleachery, St. Louis, Mo.
Putnam, Leverett N.	IV	Dyer, Arlington Mills, Lawrence, Mass.
Reed, Norman B.	I	Accountant and Engineer, Storer and Bishop, Boston, Mass.
Robson, Frederick W. C.	IV	
Smith, Doane W.	II	U. S. Naval Reserve Force.
Smith, Theophilus G., Jr.	IV	Groton, Mass.
Stronach, Irving N.	IV	Dyer and Finisher, Aberfoyle Mfg. Co., Chester, Pa.
Whitcomb, Roscoe M.	IV	Druggist, R. M. Whitcomb & Company, Ashland, N. H.

Evening Course, 1910

Certificate Holders

Anderton, Harry	Va	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
Atkinson, Norman	Vb	Of Whitwham & Atkinson, Lawrence, Mass.
Bailey, Carl E.	Ia	General Manager, Franklin Mills Corp., Franklin, Mass.
Banks, Jonas	Vc	See Evening, 1909.
Berry, Percy W.	Vb	Treasurer and Manager, Walbuck Crayon Co., Lawrence, Mass.
Bourchard, Ethan J.	Vc	
Bourchard, Robert R.	Vb	Photographer, Indianapolis, Ind.
Burgess, Joseph H.	IIIa	See Evening, 1906.
Campbell, Edward G.	VIc	Auctioneer, Real Estate and Insurance, Lowell, Mass.
Christison, Hugh	IV	Assistant Chemist, Arlington Mills, Lawrence, Mass.
Cox, Edward J.	IIIa	Assistant Overseer, Merrimack Mfg Co., Lowell, Mass.
Cutress, Albert J.	VIId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Deely, John A.	Vb	Pittsfield, Mass.
Duckett, Fred I.	Vb	With American Woolen Co., Lawrence, Mass.
Dulligan, Lawrence F.	VIa	Foreman, U. S. Cartridge Co., Lowell, Mass.
Dunn, George C.	IVa	See Evening, 1908.
Eklund, Louis V.	Vb	With Merrimack Woolen Co., Dracut, Mass.
Fielding, Fred	Vc	With Wamsutta Mills, New Bedford, Mass.

Name	Course	Occupation
Flemings, Lester A.	Va	Manager, Bay State Cotton Corporation, Lowell, Mass.
Flynn, John	VIId	Toolmaker, Kitson Plant, Saco-Lowell Shops, Lowell, Mass.
Flynn, Patrick	Vb	Deceased.
Fujiyoshi, Heisayu	Ia	Died April 19, 1915.
Gaspar, Edith E.	IIIf	Clerk, Lawrence Mfg. Co., Lowell, Mass.
Gauthier, William	Vb	Died October, 1915.
Hering, Paul C.	IIIfa	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
Hibbert, George E.	Va	Second Hand, Suncook Mills, Suncook, N. H.
Hill, Ellsworth O. C.	IIb	Superintendent, Highland Worsted Mill, Camden, N. J.
Hilliard, William B.	VIa	Machinist, B. & M. R. R., North Billerica, Mass.
Hird, Arthur W.	Ia	Overseer, Lawrence Mfg. Co., Lowell, Mass.
Hird, James A.	IVa	
Hodgkins, Albert A.	IIIfa	See Evening, 1909.
Hoellrich, Martin J.	Vc	See Evening, 1908.
Holt, Gavin O.	IVa	
Houston, William I.	Vb	
Hunton, John H.	VII	See Day, 1911.
Hurtado, Leopoldo, Jr.	Vc	See Day, 1910.
Hutton, Thomas V.	Vb	Electrician, W. C. Hinckley, Lowell, Mass.
Jackson, Frank	VIb	With Monomac Spinning Co., Lawrence, Mass.
Jean, Adhemard C.	VIa	U. S. Military Service.
Jordan, Frederic W.	IV	
Jorde, Linville T.	VIc	Manager, Co-operative Grocery Stores Co., Dover, N. H.
Kershaw, Benn	Vc	See Evening, 1909.
Kershaw, Samuel S.	IIb	Overseer, Silesia Worsted Mills, No. Chelmsford, Mass.
Krause, George R.	VII	
LaJeunesse, Joseph A.	IVa	With Primo Co., Montreal, Canada.
Larkin, Mrs. Joseph P. (Phelps, Mary I.)	IIIfb	215 Arsenal St., Watertown, Mass.
Leck, Arthur J.	VII	Head of Technical Department for Fabric Analysis, Earl & Wilson, Troy, N. Y.
Ledoux, Blanche H.	IIIfb	Bookkeeper, Vigeant's Market, Lowell, Mass.
Lemire, Arthur	Ia	
McAuliffe, Patrick D.	VIb	Glazier, Lowell, Mass.
McElroy, Samuel H.	Vb	With Heinze Electric Co., Lowell, Mass.
Mabbett, Albert L.	IIIfa	Superintendent, Newport Woolen Co., Newport, Me.
Maxcy, Leo M.	VIc	Foreman, F. E. Jewett and Co., Lowell, Mass.
Messiah, Hiram G.	Vb	
Murphy, Mrs. Frank (Gookin, Alice L.)	IIIfb	426 Irving St., N. W., Washington, D. C.
Nelson, Ernest H.	Vc	See Evening, 1900.
Nelson, Gustave A.	Vb	With T. Martin and Bro. Mfg. Co., Lowell, Mass.

Name	Course	Occupation
Nichols, Clarence W.	Vb	Mechanic, Stowe & Woodward Co., Cam- pello, Mass.
Nicoll, John	IVa	Second Hand, Dyehouse, Acadia Mills, Lawrence, Mass.
Paquin, Joseph	Vlb	See Evening, 1909.
Petterson, Birger	Vla	Master Mechanic, Lowell Bleachery, Low- ell, Mass.
Redman, H. Stewart	IV	See Evening, 1904.
Robinson, Thomas	Vc	See Evening, 1909.
Root, Francis X.	IIIa	
Shackleton, John H.	Ia	See Evening, 1908.
Stewart, William W.	IV	Overseer of Dyeing, Esmond Mills, Es- mond, R. I.
Stopherd, William H.	VII	See Evening, 1899.
Stott, Bertram S.	Vb	With U. S. Worsted Co., Andover, Mass.
Stott, Samuel	IV	Overseer of Dyeing, Arlington Mills, Law- rence, Mass.
Sullivan, Michael F.	Vlb	U. S. Military Service.
Todd, Henry	VII	With Lawrence Gas Co., Lawrence, Mass.
Welch, Benjamin L.	Vlb	U. S. Navy.
Whitman, William P.	IVa	Second Hand, Farwell Bleachery, Law- rence, Mass.
Whitney, Frederick A.	IV	Dyer, John S. Boyd Co., Williamstown, Mass.
Williams, Allen R.	Ia	U. S. Military Service.
Worthington, John A.	Ia	U. S. Military Service.

Day Course, 1911

Diploma Graduates

Adams, Tracy A.	IV	Department Superintendent, Sayles Finish- ing Plants, Saylesville, R. I.
Bailey, Walter J.	IV	With Bayburn Cleansing Shop, Cam- bridge, Mass.
Blaikie, Howard M.	II	Inspector, Ordnance Dept., Washington, D. C.
Cameron, Elliott F.	IV	Chief, Field Service Division Bureau, War Risk Insurance, Treasury Dept., Washington, D. C.
Chandler, Proctor R.	IV	Assistant Manager, Atlantic Dyestuff Co., Boston, Mass.
Chisholm, Lester B.	I	General Superintendent, Everlastik, Inc., Boston, Mass.
Dewey, Maurice W.	II	Treasurer, Peck Brothers Co., Montpelier, Vt.
Flynn, Thomas P.	IV	U. S. Military Service.
Ford, Edgar R.	IV	Finisher, Saylesville Bleachery, Sayles- ville, R. I.
Gainey, Francis W.	IV	Chemist, Pacific Mills, Lawrence, Mass.
Hay, Ernest C.	II	Superintendent, Monomac Spinning Co., Lawrence, Mass.
Hendrickson, Walter A.	II	With Wiley, Bickford & Sweet Co., Wor- cester, Mass.
Hubbard, Ralph K.	IV	Superintendent, L. W. Packard & Co., Ashland, N. H.
Hunton, John H.	II	Treasurer and General Manager, Newicha- wanick Company, So. Berwick, Me.

Name	Course	Occupation
Martin, Harry W.	IV	Chemist, Hood Rubber Co., Watertown, Mass.
Merrill, Allan B.	IV	Chemist, B. F. Goodrich Co., Akron, Ohio.
Moore, Karl R.	IV	Corporal, Gas Defense Service, Washington, D. C.
O'Connell, Clarence E.	IV	Second Hand in Dyehouse, Boston Mfg. Co., Waltham, Mass.
Pearson, Alfred H.	IV	Second Hand, Dyehouse, Goodall Worsted Co., Sanford, Me.
Rich, Everett B.	III	Managing Partner, C. H. Greenleaf Co. Hotel Vendome, Boston, Mass. and Manager, Profile and Flume Hotels Co., Profile House, N. H.
Sidebottom, Leon W.	IV	Second Hand, Dyehouse, Appleton Co., Lowell, Mass.
Standish, John C.	IV	Superintendent, F. C. Huyck and Sons, Albany, N. Y.
Toshach, Reginald A.	II	U. S. Military Service.
Walker, Alfred S.	II	Overseer, Essex Mills, Picton, N. J.
Watson, William	III	U. S. Military Service.
Wood, Ernest H.	IV	Instructor, Department of Biological Chemistry, Marquette University School of Medicine, Milwaukee, Wis.

Evening Course, 1911

Certificate Holders

Andrews, Oliver	Ia-Va	Salesman, Wellington, Sears & Co., New York City.
Ballinger, William E.	IIb	Overseer, U. S. Runting Co., Walsh's Mill, Lowell, Mass.
Barnes, Joseph	Ia	
Bastow, Percy	IVa	Dyer's Assistant, Wood Worsted Mills, Lawrence, Mass.
Birkby, Charles H.	IVa	Assistant Superintendent, Chas. H. Felstein Co., Philadelphia, Pa.
Brown, William F.	VIIb	Master Mechanic, U. S. Worsted Co., Lowell, Mass.
Burke, James F.	Vc	U. S. Navy.
Carpilio, John A.	VIa	With Alfred Kimball Shoe Co., So. Lawrence, Mass.
Carty, Thomas P.	Vb	Lowell, Mass.
Christison, Hugh	IVd	See Evening, 1910.
Cochrane, John	VIIb	Electrician, Lowell Gas Light Co., Lowell, Mass.
Cote, George W.	VIIb	Electrician, U. S. Cartridge Co., Lowell, Mass.
Cox, Edward J.	Va	See Evening, 1910.
Dean, Hubert R.	VIIb	Engineer, John A. Stevens, Eng., Lowell, Mass.
Delaney, Michael J.	Vb	Clerk, U. S. Cartridge Co., Lowell, Mass.
Dodge, Ernest W.	Vb	
Downs, John F.	VId	With Heinze Electric Co., Lowell, Mass.
Dulligan, Thomas J.	VIa	Foreman, U. S. Cartridge Co., Lowell, Mass.

Name	Course	Occupation
Flaherty, William	Vb	With Faulkner's Mill, No. Billerica, Mass.
Fournier, Albert A.	Ia	Overseer, Renfrew Mfg. Co., Adams, Mass.
Fujiyoshi, Heisayu	Va	Died April 19, 1915.
Gakidis, Alexander N.	IVa	Proprietor of Drug Store, Manchester, N. H.
Garrity, Joseph F.	VId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Glennon, Edward M.	IVa	Overseer, Mercerizing, Horne Bleach & Dye Works, Pawtucket, R. I.
Goodwin, Ross	Vb	With U. S. Cartridge Co., Lowell, Mass.
Gustafson, Alfred L.	IVa	U. S. Military Service.
Handley, John M.	Vb	Assistant Overseer, U. S. Cartridge Co., Lowell, Mass.
Hanslip, Charles W.	Vb	
Hartwell, Marcus H.	Ia-Va	Overseer, U. S. Cartridge Co., Lowell, Mass.
Heaton, Forster G.	IV	Died December, 1914.
Herrick, William E.	VII	Assistant Superintendent, Albany Felt Co., Albany, N. Y.
Hibbert, George E.	Vc	See Evening, 1910.
Hodge, William	VIa	Bookkeeper, Plymouth Mills, Lawrence, Mass.
Kennedy, William E.	VIa	U. S. Military Service.
Lemire, Arthur	Va	See Evening, 1910.
Linberg, Joseph F.	IVa	Of J. F. Linberg Co., Jamestown, N. Y.
Logan, George H. S.	IV	
McNamara, Thomas	Vb	With Merrimack Mfg. Co., Lowell, Mass.
Manning, James B.	IVa	Chemist and Dyer, Felters Co., Inc., Millbury, Mass.
Marsden, Phillips B.	IVa	Manufacturing Superintendent, Howard Bros. Mfg. Co., Worcester, Mass.
Milot, Joseph E.	VIc	Cabinet Maker, Amasa Pratt Co., Lowell, Mass.
Murphy, Howard H.	IIb	In business, Boston, Mass.
Nelson, James A.	Ia	Superintendent, H. E. Locke & Co., Inc., Boston, Mass.
Nelson, Sigfred W.	VId	Machinist, Spring Snap Fastener Co., Lynn, Mass.
Newall, Preston	Ia	Superintendent, J. W. Sanders, Starkville, Miss.
Newsholme, Charles E.	VIb	U. S. Military Service.
Nichol, Samuel J.	IVa	Dyer, Waterhead Mills, Lowell, Mass.
Nichols, Nathan A.	VIb	Draftsman, The Lamson Co., Lowell, Mass.
Parkin, Prescott R.	Vb	Receiving Clerk, General Electric Co., East Boston, Mass.
Payette, Mrs. Wilfred (Lachance, Melina)	IIIb	98 Blaisdell St., Haverhill, Mass.
Pedler, William A.	IVa	See Evening, 1906.
Perron, Francis J.	Vb	Quartermaster's Department, Washington, D. C.
Perry, Clarence R.	IIb	Assistant Superintendent, Yarn Dept., Washington Mills, Lawrence, Mass.
Racicot, Marie E.	IIIb	Designer, Pentucket Narrow Fabric Co., Lowell, Mass.
Robinson, James E.	VII	
Robinson, Ruddach P.	VII	Superintendent, Beaver Brook Mills, Collinsville, Mass.

Name	Course	Occupation
Rogers, John F.	Ia	U. S. Military Service.
Rowlands, Harold	Va	Bookkeeper, Massachusetts Cotton Mills, Boston, Mass.
Shaffer, William A.	VId	Machinist, W. W. Carey, Lowell, Mass.
Shields, John J.	Va	U. S. Military Service.
Stanley, John R.	IIb	Section Hand, Starr Worsted Co., Fitchburg, Mass.
Stearns, Orlo F.	IVa	Assistant Examiner, Patent Office, Department of the Interior, Washington, D. C.
Stewart, George	Ia-IVa	Overseer of Dyeing, Massachusetts Cotton Mills, Lowell, Mass.
Tennant, Joseph A.	VId	Machinist, Lawrence Duck Co., Lawrence, Mass.
Wade, Frank J.	Vb	
Walton, Frank L.	Ia	First Lieutenant, Quartermaster's Department, Philadelphia, Pa.
Ward, Bernard D.	IIIa	Pattern Weaver, U. S. Bunting Co., Lowell, Mass.
Williams, Allen R.	Va	See Evening, 1910.
Willmott, Herbert J.	VIa	Chief Mechanical Engineer, Hennessy Mfg. Co., Northampton, Mass.
Wollin, Frederick W.	Va	Second Hand, Utica Steam Cotton Mill, Utica, N. Y.
Wright, Frederick J.	Vb	Died March 19, 1914.

Day Course, 1912

	Diploma	Graduates
Bigelow, Prescott F.	II	Jamaica Plain, Mass.
Brown, Rollins G.	IV	Superintendent of Cotton Mill, White Mills of New Hampshire, West Peterboro, N. H.
Coan, Charles B.	IV	Chemist, Royal Hasco Co., Weehawken, N. J.
Conant, Richard G.	I	U. S. Military Service.
Dalton, Gregory S.	IV	Assistant Superintendent, Mansfield Tire and Rubber Company, Mansfield, Ohio.
Dearth, Elmer E.	IV	Efficiency Engineer, Lee Tire & Rubber Co., Conshahocken, Pa.
Elliot, Gordon B.	II	First Lieutenant, Ordnance Department, Washington, D. C.
Engstrom, Karl E.	VI	
Frost, Harold B.	II	Quartermaster's Department, Cambridge, Mass.
Hassett, Paul J.	IV	Inspector, Ordnance Department, Washington, D. C.
Holmes, Otis M.	VI	See Day, 1913.
Hood, Leslie N.	IV	Chemist, Kuttroff, Pickhardt & Co., Inc., Providence, R. I.
Lamont, Robert L.	II	Industrial Engineer, Laclede Christy Clay Products Co., St. Louis, Mo.
Leitch, Harold W.	IV	See Day, 1914.
Munroe, Sydney P.	I	With Wamsutta Mills, Fall River, Mass.

Name	Course	Occupation
Niven, Robert S.	VI	Draftsman, General Electric Company, Lynn, Mass.
Pottinger, James G.	II	Quartermaster's Department, Jacksonville, Fla.
Roche, Raymond V.	IV	Overseer, Bleaching and Mercerizing, Renfrew Mfg. Co., Adams, Mass.
Rundlett, Arnold D.	VI	U. S. Military Service.
Shea, Francis J.	II	U. S. Military Service.
Sullivan, John D.	VI	With Haverhill Box Board Co., Bradford, Mass.
Thaxter, Joseph B., Jr.	II	Salesman, Smith and Dove Mfg. Co., Andover, Mass.
Whitehill, Warren H.	IV	War Gas Investigation, War College, Washington, D. C.
Yavner, Harry	II	Inspector, Quartermaster's Department, Somerville, Mass.

Evening Course, 1912

Certificate Holders

Beech, Wilfred	Ia	With Colt Mfg. Co., Hartford, Conn.
Bernard, Joseph E.	VId	Machinist, Upton & Gilman, Lowell, Mass.
Blais, Emile	VId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Blanchette, Eugene	IIIb	With T. Martin & Bro. Mfg. Co., Lowell, Mass.
Boije, Walter F.	IIb-VII	Section Hand, Wood Worsted Mills, Lawrence, Mass.
Brainerd, Albert C.	Ia	Second Hand, Everett Mills, Lawrence, Mass.
Brainerd, Harry C.	Ia	Second Hand, Lower Pacific Mills, Lawrence, Mass.
Bramley, Charles	Va	
Broderick, Thomas H.	VII	In charge of fulling, Stevens Mills, North Andover, Mass.
Browne, Charles D.	Ia	Assistant Manager, Sherman Mfg. Co., Sherman, Texas.
Burke, George J.	VII	With Merrimack Woolen Co., Dracut, Mass.
Buzzell, Fred S.	IIIa	Second Hand, Arlington Mills, Lawrence, Mass.
Carlson, Goddard O.	VII	Overseer, Stirling Mills, Lowell, Mass.
Christenson, John O.	Vib	
Clark, John W.	IVa	Overseer, Dyeing, Wauskuck Co., Providence, R. I.
Daskalakis, Efthimios Z.	Vb	With Boott Mills, Lowell, Mass.
Dick, Henry K.	Ia	Instructor, Textile Dept., N. C. State College, West Raleigh, N. C.
Dittman, Ralph A.	IIIa	Died May 4, 1917.
Dollbaum, John A.	IIIa	Died July 7, 1916.
Donahey, William H.	Vb	Fixer, U. S. Cartridge Co., Lowell, Mass.
Dulligan, Charles E.	IVa	See Evening, 1909.
Egan, Charles H.	IVa	Gas Defense Service, Astoria Light, Heat and Power Co., Astoria, L. I.
Freeman, Ralph W.	IVa	Second Hand Dyer, Waucantuck Mills, Uxbridge, Mass.

Name	Course	Occupation
Frothingham, Newton S.	Ia	U. S. Military Service.
Graves, John F.	VIb	U. S. Military Service.
Greenwood, Ralph F.	VII	Manager, Stafford Mills, Central Falls, R. I.
Hansen, Hans M.	VIId	Foreman, U. S. Cartridge Co., Lowell, Mass.
Hartshorn, George T.	VII	With American Felt Co., Glenville, Conn.
Hibbert, George E.	Vb	See Evening, 1910.
Higginson, Joseph H.	IIIa	Superintendent, Marland Mills, Andover, Mass.
Holland, Walter F.	IIIa	Loomfixer, Washington Mills, Lawrence, Mass.
Hutchings, James C.	VII	Foreman, Lower Pacific Mills, Lawrence, Mass.
Jackson, Frank	VIId	See Evening, 1910.
Jasper, Grant	Vc	Farmer, Mapleside Poultry Farm, Hudson, N. H.
Kent, Arthur	VIb	Died August, 1914.
Kerrigan, Arthur J.	VIa	Electrical Engineer, General Electric Co., Schenectady, N. Y.
Lambert, Harry	I Ib	Section Hand, Pacific Mills, Lawrence, Mass.
Lapierre, Alderic S.	IIIa	Second Hand, Tremont and Suffolk Mills, Lawrence Section, Lowell, Mass.
LaPorte, Philip J.	IVa	Chemist, Lowell Gas Light Co., Lowell, Mass.
Leith, Joseph E.	Vb	Second Hand, Jackson Mills, Nashua, N. H.
Lockberg, John L.	VIId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Lowe, John C.	I Ib	Textile Inspector, Quartermaster's Department, Cambridge, Mass.
McCann, Martin	Vb	
Macdonald, Chester W.	VIa	Department Head, Practical Electricity, Lowell Vocational School, Lowell, Mass.
Michael, Joseph C.	Vb	U. S. Military Service.
Muldoon, Joseph M.	VIb	Mechanical Draftsman, U. S. Government, Balboa, Canal Zone.
Naylor, Charles	IVa	Died January, 1914.
Orrell, Frank L.	I Ib	See Evening, 1909.
Palm, Carl H.	VIa	Sub-Foreman, The Lamson Co., Lowell, Mass.
Preble, George A.	Va	See Evening, 1908.
Prescott, William B.	Va	Cotton Broker, A. H. Chase & Co., Boston, Mass.
Redman, H. Stewart	VIa	See Evening, 1904.
Riley, Edward T.	IIIa	Textile Inspector, Quartermaster's Department, Boston, Mass.
Robinson, Mrs. James P. (Pihl, Ingrid I.)	IIIb	208 Princeton St., Lowell, Mass.
Rollins, Henry E.	VII	Overseer of Dyeing, American Woolen Co., Moosup, Conn.
Royds, James	Ia	Overseer, Boott Mills, Lowell, Mass.
Savage, Charles F.	IVa	Civil Engineer, Smith & Brooks, Lowell, Mass.
Shearer, David D.	VII	Second Hand, Finishing, Rhode Island Worsted Co., Stafford Springs, Conn.

Name	Course	Occupation
Skidmore, Russell P.	Vib	Springfield, Mass.
Smith, William F.	Vid	Lowell, Mass.
Stevens, Harold S.	IIIa	U. S. Military Service.
Stevenson, Robert P.	Ia	Salesman, Wm. V. Threlfall, Boston, Mass.
Sugden, Albert G.	IIIa	Designer, U. S. Bunting Co., Lowell, Mass.
Swanson, Victor E.	IVa	Carbonizer, Stirling Mills, Lowell, Mass.
Taylor, Harold S.	Vib	Clerk, H. H. Russell, Lowell, Mass.
Towers, Frederic G.	Ia	Section Hand, Pacific Mills, Lawrence, Mass.
Turgeon, Roderick	IVa	Clerk, Talbot Dyewood and Chemical Co., Lowell, Mass.
Vause, John	Va	
Ward, Herbert H.	Vb	Gilbertville, Mass.
Webster, Orrin H.	Ia	Assistant Superintendent, Massachusetts Cotton Mills, Lowell, Mass.
Wicks, Frederic M.	IIIa	Overseer, Weaving, Bell Co., Worcester, Mass.
Wilkinson, Joseph	IIIa	Loomfixer, U. S. Bunting Co., Lowell, Mass.
Wood, Arthur S.	Va	Second Hand, Granby Elastic Web Co., Granby, P. Q.

Day Course, 1913

Degree Graduates

Holmes, Otis M.	VI	Draftsman, United Shoe Machinery Company, Beverly, Mass.
Pensel, George R.	IV	Chemist, Shuttlesworth Brothers Company, Amsterdam, N. Y.

Diploma Graduates

Bennett, Herbert B.	II	Salesman, Foster & Stewart Co., Brooklyn, N. Y.
Cleary, Charles J.	II	U. S. Military Service.
Cook, Kenneth B.	I	Textile Expert, U. S. Rubber Co., Newark, N. J.
Davieau, Arthur N.	VI	Head Timekeeper, Cheney Brothers, So. Manchester, Conn.
Davis, Alexander D.	VI	See Day, 1914.
Dearborn, Roy	VI	Purchasing Agent, Brightwood Mfg. Co., No. Andover, Mass.
Gadsby, Arthur N.	II	Assistant Physicist, Bureau of Standards, Washington, D. C.
Horton, Chester T.	VI	See Day, 1914.
Johnson, Arthur K., B. S.	IV	U. S. Military Service.
Mather, Harold T.	VI	U. S. Military Service.
Murray, James	IV	Manager, Crescent Color & Chemical Works, Inc., Dunnellen, N. J.
Peck, Carroll W.	IV	U. S. Military Service.
Pillsbury, Ray C.	I	Investigator, Cheney Bros., So. Manchester, Conn.
Plummer, Elliott B.	IV	Assistant Superintendent, Sayles Finishing Co., Plant C, Phillipsdale, R. I.
Putnam, Philip C.	IV	With Sayles Finishing Co., Glenlyon Dye-works, Saylesville, R. I.

Name	Course	Occupation
Richardson, Richardson P.	I	Assistant Superintendent, Nos. 2 and 3 Thread Mills, Clark Thread Co., East Newark, N. J.
Sylvain, Charles E.	VI	With International Machinery Co., New York City.
Walen, Ernest D.	VI	See Day, 1914.

Evening Course, 1913

Certificate Holders

Abbott, Arthur G.	Vb	Died August 16, 1916.
Allen, William J.	IVa	U. S. Naval Service.
Anderton, Harry	Vb	See Evening, 1910.
Atkinson, Reginald C.	IVa	Assistant Superintendent, Lowell Bleachery, St. Louis, Mo.
Bassett, Cyrus J.	Vb	Fixer, U. S. Cartridge Co., Lowell, Mass.
Beaulieu, William E.	IIb	Machinist, International Steel and Ordnance Corporation, Lowell, Mass.
Bell, Charles W.	VIa	Electrician, Gorham Mfg. Co., Providence, R. I.
Black, Alexander S.	Vb	Bookkeeper, Pacific Mills, Lawrence, Mass.
Breen, James D.	Vc	Cloth Inspector, Tremont & Suffolk Mills, Lowell, Mass.
Breen, John P.	Vb	With Bay State Mills, Lowell, Mass.
Butland, Ralph A.	VII	U. S. Military Service.
Buzzell, Fred S.	VII	See Evening, 1912.
Charleton, Peter	VIA	Lowell, Mass.
Clarke, Wesley J.	VIId	Aeroplane Assembler, Burgess Aeroplane Co., Marblehead, Mass.
Classon, Walter H.	Vc	Second Hand, Nashua Mfg. Co., Nashua, N. H.
Cote, Fred J.	VIa	Transformer Designing, General Electric Co., Pittsfield, Mass.
Cox, Edward J.	Ia	See Evening, 1910.
Cudmore, Edward T.	VIId	Lowell, Mass.
Cushing, Lester H.	Ia	Instructor in Languages, Lowell Textile School, Lowell, Mass.
Daskalakis, Efthimios Z.	Vc	See Evening, 1912.
Devine, Mary F.	IVa	Teacher, Public Schools, Lowell, Mass.
Doyle, John B.	VIId	With M. Doyle & Son, Lowell, Mass.
Dunn, George C.	IVb	See Evening, 1908.
Ekengren, Hilding C.	IIIb	Clerk, Dickerman and McQuade, Lowell, Mass.
Forrest, William R.	VIId	With F. M. Bill & Co., Lowell, Mass.
Freeman, George D.	VIId	With U. S. Cartridge Co., Lowell, Mass.
Giffin, Charles H.	IIIa	Overseer, P. F. Amidon and Son, Wilton, N. H.
Giffin, George R.	IIIa	Overseer, Somerset Mfg. Co., Raritan, N. J.
Gile, Harold E.	IVa	Chemist, Diamond Match Co., Lawrence, Mass.
Gordon, Loyd H.	VIa	Machinist, James F. Gordon Machine Shop, Lowell, Mass.
Hannagan, Edward F.	IIb	Section Hand, Washington Mills, Lawrence, Mass.
Hanson, Edward	Ia	See Evening, 1908.

Name	Course	Occupation
Herron, Alexander T.	Ia	Second Hand, Dyeing, Arcadia Mills, Lawrence, Mass.
Higgins, Alfred	IIIa	Designer and Second Hand, Wauregan Co., Wauregan, Conn.
Hoelzel, Louis C.	VIa	Loomfixer, Washington Mills, Lawrence, Mass.
Howker, John	Ia	Foreman, Boott Mills, Lowell, Mass.
Innes, Andrew K.	Vb	Second Hand, Arlington Mills, Lawrence, Mass.
Jackson, Walter J.	IIa	Assistant Superintendent, Sutton's Mills, No. Andover, Mass.
Jarvis, Charles	Vb	
Jones, Herbert	Ia	Superintendent, Goodyear Cotton Mills, Inc., Killingly, Conn.
Kershaw, Samuel S.	Vb	See Evening, 1910.
Kirkpatrick, Lloyd A.	Ia	Representative, Wonalancet Co., Boston, Mass.
LaJeunesse, Joseph A.	IVc	See Evening, 1910.
Lambert, Seth	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Lang, William A.	Vc	With Lockwood, Greene and Co., Boston, Mass.
Learned, Frank E.	Va	U. S. Military Service.
Leaver, Raymond J.	VIb	U. S. Military Service.
Leonard, Charles W.	VII	Second Hand, Dyehouse, Mayo Woolen Co., Millbury, Mass.
Lowe, Harry F.	Va	U. S. Military Service.
McDonald, William A.	VIb	Machinist, Saco-Lowell Shops, Lowell, Mass.
McGowan, Annie C.	IIIb	With Lowell Hosiery Co., Lowell, Mass.
McGurn, James P.	VId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Maguire, Andrew F.	Vb	With Massachusetts Mohair Plush Co., Lowell, Mass.
Manning, James B.	IVb	See Evening, 1911.
Maynard, Wilfred B.	VII	Paymaster, Brookfield Woolen Co., Lowell, Mass.
Metcalf, Walter B.	IIb	Fitchburg, Mass.
Miller, Ernest P., Jr.	Ib	With Cheney Bros., So. Manchester, Conn.
Monahan, Patrick H.	VId	Machinist, Saco-Lowell Shops, Lowell, Mass.
Murphy, Leo T.	Vc	Clerk, U. S. Cartridge Co., Lowell, Mass.
Musard, Henry A.	Vc	Machinist, Remington Arms, Bridgeport, Conn.
Nelson, Ernest H.	Ib	See Evening, 1900.
Nicoll, John	IVb	See Evening, 1910.
Orrell, Ernest R.	VId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Orrell, Frank L.	Vb	See Evening, 1909.
Preble, George A.	Vb-Vc	See Evening, 1908.
Quinn, James H.	VII	Second Hand, Arlington Mills, Lawrence, Mass.
Randall, William O.	IIb	Chief Clerk, Cost Accounting Department, Westinghouse Co., Chicopee Falls, Mass.
Redman, H. Stewart	Ib	See Evening, 1904.

Name	Course	Occupation
Redpath, Robert H.	VII	With Brightwood Mfg. Co., No. Andover, Mass.
Reynolds, James J.	Vc	Boston, Mass.
Rollins, Sidney R.	I Ib	Clerk, American Woolen Co., Boston, Mass.
Shaw, William	VIa	Draftsman, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
Shearer, David D.	Vb	See Evening, 1912.
Sleeper, Robert R.	VII	See Day, 1900.
Soule, William N.	VI d	Lowell, Mass.
Sugden, Albert G.	VII	See Evening, 1912.
Sullivan, Michael F.	VIa	See Evening, 1910.
Wainwright, Harold	IVa	Second Hand, Dyeing, Everett Mills, Lawrence, Mass.
Whitman, William P.	IVb	See Evening, 1910.
Wilkinson, Joseph	VII	See Evening, 1912.
Younger, Andrew	IIIa	Instructor, Weaving, Lowell Textile School, Lowell, Mass.

Day Course, 1914

Degree Graduates

Davis, Alexander D.	VI	Draftsman, Springfield Armory, Ordnance Department, Springfield, Mass.
Horton, Chester T.	VI	Wilmington, Mass.
Leitch, Harold W.	IV	Chemist, Brightwood Manufacturing Co., North Andover, Mass.
Walen, Ernest D.	VI	Chief of Textile Section, Military Fabrics, Bureau of Standards, Washington, D. C.

Diploma Graduates

Blake, Parker G.	VI	Canadian Representative, Crimmins and Pierce, Boston, Mass.
Bradley, Raymond F.	VI	U. S. Military Service.
Brickett, Raymond C.	II	Overseer, Columbia Rope Co., Auburn, N. Y.
Creese, Guy T.	IV	Chemist, Creese and Cook Co., Danvers, Mass.
Dorr, Clinton L.	VI	With Stark Mills, Manchester, N. H.
Fisher, Russell T.	VI	Military Research, Bureau of Standards, Washington, D. C.
Lillis, Marvin H.	IV	With Brightwood Mfg. Co., No. Andover, Mass.
McGowan, Frank R.	VI	See Day, 1915.

Evening Course, 1914

Certificate Holders

Alter, Frederick A.	IVa	Dyer and Chemist, Meritas Mills, Columbus, Ga.
Bakewell, Albert	Vb	With Anderson's Tire Shop, Lowell, Mass.
Barnes, Hammond	Ia - Va	U. S. Military Service.

Name	Course	Occupation
Bixby, Edward E.	IIIa	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Boyle, John E.	Va	Clerk, Waterhead Mills, Lowell, Mass.
Brandy, William F.	IVa	Assistant Superintendent, Henry Klous, Inc., Lawrence, Mass.
Brown, James H.	VIa	Electrical Engineer, New England Power Co., Clinton, Mass.
Brown, Leon E.	VIa	Foreman, Pattern and Carpenter Department, Lamson Co., Lowell, Mass.
Burns, Richard L.	Vib	Pattern Making, Foundry, Tremont and Suffolk Mills, Lowell, Mass.
Campling, Frank	IIb	Section Hand, Arlington Mills, Lawrence, Mass.
Clark, John H.	IVa	U. S. Military Service.
Cochrane, William D.	IVa	Chemist, Merrimac Chemical Co., North Woburn, Mass.
Collins, Frank	VIa	Mechanical Draftsman, Lockwood, Greene & Co., Boston, Mass.
Cooper, George H.	Ia	Chief Shipping Clerk, Vickery and Hill Publishing Co., Augusta, Me.
Cox, Edward J.	Ia	See Evening, 1910.
Delderfield, John W.	VIId	U. S. Military Service.
Donahue, William E.	Vib	Toolmaker, U. S. Cartridge Co., Lowell, Mass.
Dowd, Martin F.	IIIa	Designer, U. S. Worsted Co., Lawrence, Mass.
Emmons, Harry I.	IVa	U. S. Military Service.
Freeman, Ralph W.	IVb	See Evening, 1912.
Gibbons, James J.	VIa	With D. H. Caswell, Optician, Lawrence, Mass.
Giffin, Charles H.	VII	See Evening, 1913.
Giffin, George R.	VII	See Evening, 1913.
Gill, Gardner G.	IVa	U. S. Military Service.
Gilman, Edward T.	VIa	Master Mechanic, Boott Mills, Lowell, Mass.
Haithwaite, Albert	Ia	With Catlin & Co., New York City.
Haldane, Andrew	Va	Section Hand, Pacific Mills, Lawrence, Mass.
Hall, Sydney H.	Vib	Assistant Manager, John Dennis Machine Co., Lowell, Mass.
Hammond, John N.	Vb	Second Hand, Sutton's Mills, No. Andover, Mass.
Hannagan, Edward F.	VII	See Evening, 1913.
Hanson, Winfield S.	IVa	Bank Clerk, Beacon Trust Co., Boston, Mass.
Hartwig, Albert E.	Vb	Student, Wentworth Institute, Boston, Mass.
Henzie, John J.	IIIa	
Herbst, Gustav F.	Va	Mt. Vernon, N. Y.
Herron, Alexander T.	IVa	See Evening, 1913.
Hill, Bruce	IIIa	Loomfixer, Arlington Mills, Lawrence, Mass.
Hill, Paul	VII	With Wood Worsted Mills, Lawrence, Mass.
Horman, Charles P.	IIIa	North Billerica, Mass.

Name	Course	Occupation
Howe, Charles W., Jr.	VId	Efficiency Engineer, Saco-Lowell Shops, Lowell, Mass.
Howker, John	Va	See Evening, 1913.
Huse, Charles H.	VIb	Student, Lowell Textile School, Lowell, Mass.
Jackson, Walter J.	Vb	See Evening, 1913.
Johnson, Arthur O.	IVa	U. S. Military Service.
Kent, Arthur	VId	Died August, 1914.
Kirkpatrick, Lloyd A.	Ia	See Evening, 1913.
LaPrise, Frank E.	IVa	Overseer of Dyeing, Mianus Mfg. Co., Coscob, Conn.
Laurin, Erick T. L.	VIb	U. S. Military Service.
Learned, Frank E.	Vc	See Evening, 1913.
Leaver, Harold E.	IIb	Textile Inspector, Quartermaster's Department, Lowell, Mass.
Leith, Joseph E.	IIIa	See Evening, 1912.
Lewis, Charles S.	VIa	Fireman, Silesia Worsted Mills, North Chelmsford, Mass.
Linehan, Thomas W.	VII	Textile Inspector, Quartermaster's Department, Lawrence, Mass.
Looby, George A.	Vc	With Bigelow Hartford Carpet Co., Lowell, Mass.
Lowe, Harry F.	Vb	See Evening, 1913.
Luce, Harry A.	VII	In Sample Department, U. S. Worsted Co., Lawrence, Mass.
MacDonald, John F.	Va	Clerk, Boott Mills, Boston, Mass.
McElroy, Claude R.	VId	Machinist, Lowell, Mass.
Mack, Clarence P.	IIIa	With American Woolen Co., Skowhegan, Me.
Macnee, Forrest F.	IIb	With George E. Kunhardt, New York City.
Mahoney, Joseph	Vc	Loomfixer, Bigelow-Hartford Carpet Co., Thompsonville, Conn.
Mears, Lewis N.	IVa	In Dyehouse, Boston Rubber Shoe Co., Malden, Mass.
Milot, Aram A.	Vb	
Mullen, Frank J.	VId	Steamfitter, Carroll Bros., Lowell, Mass.
Nichol, Samuel J.	IVb	See Evening, 1911.
Nichols, Fernald H.	VIb	Draftsman, John A. Stevens, Lowell, Mass.
O'Brien, Frederick A.	VIb	U. S. Military Service.
Parker, John G.	Va	Clerk, Waterhead Mills, Lowell, Mass.
Pickles, Wilfrid	Va	With Pacific Mills, Lawrence, Mass.
Pierce, Duncan H.	VII	Manager, Foster Grain Co., Lowell, Mass.
Pierce, Gordon J.	Vb	With Riverside Mills, Olneyville, R. I.
Pihl, Mansfred M.	VIb	Machinist, U. S. Cartridge Co., Lowell, Mass.
Pinkham, Banford O.	VId	Overseer, Smith and Dove Mfg. Co., Andover, Mass.
Playdon, Louis C.	Ia	Overseer of Spinning, Pacific Mills, Lawrence, Mass.
Redpath, Robert H.	Vb	See Evening, 1913.
Roesler, Alfred	IIIa	Died July 8, 1916.
Rouine, Francis E.	VIb	Assistant Foreman, U. S. Cartridge Co., Lowell, Mass.
Schmidt, Hartman F.	IIb - VII	Overseer, Albany Felt Co., Albany, N. Y.

Name	Course	Occupation
Smith, Leonard	VIa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Steere, Samuel A.	Va	Superintendent, Trainer Spinning Co., Chester, Pa.
Stewart, George	Va	See Evening, 1911.
Stokham, Ernest F.	IVa	Foreman, Lowell Dye Works, Lowell, Mass.
Torpey, Henry K. W.	VIb	Second Hand, Massachusetts Cotton Mills, Lowell, Mass.
Turner, Roscoe C.	I Ib	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Twomey, Hugh	VI d	Blacksmith, Lowell, Mass.
Woodbury, Eugene P.	VII	With George E. Kunhardt, Lawrence, Mass.
Younger, Andrew	VII	See Evening, 1913.

Day Course, 1915

Degree Graduates

Cosendai, Edwin F. E.	IV	Superintendent, Nitro Products Co., Saginaw, Mich.
Lane, Oliver F.	IV	U. S. Naval Reserve.
McGowan, Frank R.	VI	Designer and Checker, Stone and Webster, Washington, D. C.
Neyman, Julius E.	IV	Chemist, U. S. Worsted Co., No. Chelmsford, Mass.
Rich, Edward	IV	With Klipstein and Co., Chrome, N. J.
Sawyer, Joseph W.	IV	Assistant Chemist, Boston Navy Yard, Boston, Mass.

Diploma Graduates

Harrington, Thomas	IV	Chemist and Foreman, R. M. S. Leather Co., Salem, Mass.
O'Brien, Philip F.	II	Assistant Designer, U. S. Worsted Co., Lawrence, Mass.

Evening Course, 1915

Certificate Holders

Alexander, Mrs. James (Smith, Mae V.)	IIIb	31 Manahan St., Lowell, Mass.
Armitage, Ernest	Vb	Loomfixer, Ayer Mills, Lawrence, Mass.
Atkinson, Henry	IIIa	Assistant Designer, Arlington Mills, Lawrence, Mass.
Ballinger, Raymond F.	VIb	Second Hand, U. S. Worsted Co., North Chelmsford, Mass.
Barrows, Ariston K.	Va	Second Lieutenant, Ordnance Department, Metuchen, N. J.
Birdsall, James E.	I Ib	Loomfixer, Washington Mills, Lawrence, Mass.
Bonney, Nathaniel H.	IVa	Draftsman, Pacific Mills, Lawrence, Mass.
Bordeleau, Georges A.	I Ib	Pharmacist, Waterbury Drug Co., Waterbury, Conn.

Name	Course	Occupation
Branch, Guy E.	I1b	Instructor, Worsted Department, Lowell Textile School, Lowell, Mass.
Brandy, William F.	I1a	See Evening, 1914.
Butland, Ralph A.	I1b	See Evening, 1913.
Caldwell, James	V1d	Machinist, M. T. Stevens Co., Andover, Mass.
Campbell, Charles F. P.	IIIb	Student, Lowell High School, Lowell, Mass.
Casavant, Elphege H.	V1d	Machinist, U. S. Navy Yard, Boston, Mass.
Chadwick, Laurie	Vb	U. S. Military Service
Cochrane, John	IVa	See Evening, 1911.
Cox, Edward J.	Vc	See Evening, 1910.
Dubois, Ubald E.	V1b	Office Clerk, Saco-Lowell Shops, Lowell, Mass.
Early, William E.	V1b	Draftsman, U. S. Naval Reserve.
Egan, John W.	V1b-V1d	U. S. Military Service.
Eichhorn, Paul A.	V1a	With Washington Mills, Lawrence, Mass.
Faneuf, George J.	V1b	U. S. Military Service.
Fernley, Bert D.	V1b-V1d	Machinist, U. S. Cartridge Co., Lowell, Mass.
Flemings, Lester A.	Ia	See Evening, 1910.
Ford, Joseph L.	IIIa	Section Hand, Pacific Mills, Lawrence, Mass.
French, George W., Jr.	IIIa	Consulting Engineer, Danvers, Mass.
Fuller, Edwin M.	Ia	Assistant Manager, Waterhead Mills, Inc., Lowell, Mass.
Gagnon, Arthur C.	V1d	Assistant Manager, George's Shoe Store, Lowell, Mass.
Garrity, Peter F.	Va	With Merrimack Mfg. Co., Lowell, Mass.
Geaney, James H.	VII	Overseer, Brightwood Mfg. Co., North Andover, Mass.
Gearin, John W.	V1b	U. S. Naval Service.
Gerry, Churchill	V1a	Switchboard Installer, N. E. Tel. & Tel. Co., Lowell, Mass.
Goddard, Harold W.	V1b	Died August 31, 1915.
Goddard, Walter L.	VII	U. S. Military Service.
Gustafson, Alfred L.	V1a	See Evening, 1911.
Hale, Frank O.	Ia	Died January 30, 1917.
Hall, Richard G.	Ia	U. S. Military Service.
Halloran, Joseph M.	IVa	Salesman, Toledo Scale Co., and A. J. Deer Co., Lowell, Mass.
Hanley, Edward T.	I1b	Clerk, Abbot Worsted Co., Forge Village, Mass.
Hashmatian, Harry	IIIb	Tailor, Red Bank, N. J.
Healy, Andrew J.	V1d	Machinist, U. S. Cartridge Co., Lowell, Mass.
Henderson, George R.	IVa	U. S. Military Service.
Higginbottom, Harold J.	IVa	U. S. Military Service.
Jackson, Charles F.	V1b	U. S. Military Service.
Jackson, Walter J.	IIIa-VII	See Evening, 1913.
Kannheiser, William A.	Vb	Loomfixer, Wood Worsted Mills, Lawrence, Mass.
Keleher, John L.	V1d	Lowell, Mass.
Kelly, Thomas F.	IVa	U. S. Gas Defense Service, Philadelphia, Pa.
Kenyon, Herbert	Ia	Die Grinder, U. S. Cartridge Co., Lowell, Mass.

Name	Course	Occupation
Kyle, George S.	Ia	Field Auditor's Department, Augusta Arsenal Depot, Augusta, Ga.
Lambert, Harry	Vb	See Evening, 1912.
Lane, Michael J.	VII	With Arlington Mills, Lawrence, Mass.
Langevin, George F.	VIb	U. S. Military Service.
Leather, Seward S.	IIb	U. S. Naval Reserve.
Lees, William H.	IIIa	Manufacturer, Lowell Narrow Fabric Co., Lowell, Mass.
Leland, Raymond C.	VIb	U. S. Military Service.
Leonard, Charles W.	IVb	See Evening, 1913.
Lightbown, William H.	Vb	Fixer, Silesia Worsted Mills, No. Chelmsford, Mass.
Lister, Henry	VII	Cloth Examiner, Wood Worsted Mills, Lawrence, Mass.
Logan, Robert F.	Va	Second Hand, Pemberton Mills, Lawrence, Mass.
Luce, Harry A.	IIIa	See Evening, 1914.
McCartin, Marietta L.	IIIa	Clerk, U. S. Bunting Co., Lowell, Mass.
McGaunn, Charles	VId	Toolmaker, U. S. Cartridge Co., Lowell, Mass.
McGaunn, Theodore	VId	Toolmaker, U. S. Cartridge Co., Lowell, Mass.
McGee, David	IVa	Died January, 1918.
McGrath, William F.	VII	Cloth Examiner, Wood Worsted Mills, Lawrence, Mass.
Maguire, James H.	IIb	See Evening, 1905.
Marsden, Fred	IIIa	With U. S. Worsted Co., Lawrence, Mass.
Merrill, Lester C.	VIb	Machinist, Saco-Lowell Shops, Lowell, Mass.
Moss, Joseph	Ia	Draftsman, Saco-Lowell Shops, Lowell, Mass.
Mountain, Everett R.	Ia	Second Hand, Bay State Cotton Corp., Lowell, Mass.
Neel, Andrew, Jr.,	IVa	Second Hand, Dyeing, Arlington Mills, Lawrence, Mass.
Nicoll, James K.	VId	Machinist, Wood Worsted Mills, Lawrence, Mass.
O'Brien, Raymond L.	IVa	Head of Dye Laboratory, National Aniline and Chemical Co., Wappingers Falls, N. Y.
Obst, Ehrich	VId	Machinist, Everett Mills, Lawrence, Mass.
O'Connor, Frank H.	Ia	Second Hand, Appleton Co., Lowell, Mass.
Pendlebury, David	Ia	Foreman, Pacific Mills, Lawrence, Mass.
Pendlebury, Harold	VId	Machinist, Arlington Mills, Lawrence, Mass.
Pike, Daniel P.	IVa	Farmer, Wamesit, Mass.
Poore, Herbert E.	IVa	U. S. Naval Reserve.
Porter, William E.	VIa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Preble, George A.	IVa	See Evening, 1908.
Regan, Joseph L.	VIb	Meter Repairing, Lowell Gas Light Co., Lowell, Mass.
Richards, Raymond A.	IIIb	With U. S. Cartridge Co., Lowell, Mass.
Roberts, Joseph	Vb	With Pacific Mills, Lawrence, Mass.

Name	Course	Occupation
Rodger, Thomas C.	IVa	Stenographer, Columbia Mfg. Co., Greenville, N. H.
Sanborn, Harold S.	VII	Cloth Examiner, Brightwood Mfg. Co., North Andover, Mass.
Schmidt, Hartman F.	IIa	See Evening 1914.
Scully, Patrick F.	IIIa-VII	Loomfixer, U. S. Worsted Co., Lowell, Mass.
Shearer, William A.	Vb	Loomfixer, U. S. Worsted Co., Lawrence, Mass.
Shedd, Howard P.	IVb	Chemist and Assistant Superintendent of New York Laboratory, West Virginia Pulp and Paper Co., New York City.
Simmers, Arthur A.	VIb	Millwright, Wood Worsted Mills, Lawrence, Mass.
Smart, George A.	Va	With Massachusetts Cotton Mills, Lowell, Mass.
Smith, Gordon N.	IVa	U. S. Military Service.
Smith, Miles H.	IIb	U. S. Military Service.
Snickers, Eugene	Ia	East Chicago, Ill.
Stafford, James	Va	Loomfixer, Pacific Mills, Lawrence, Mass.
Stahl, Milton C.	IIb	Section Hand, The Barre Wool Combing Co., So. Barre, Mass.
Stewart, Warren D.	IVa	Chief Chemist, Pawtucket Gas Co., Pawtucket, R. I.
Stiehler, Arthur F.	Vb	Loomfixer, Washington Mills, Lawrence, Mass.
Swift, John W.	IIb	Overseer, Hamilton Woolen Co., Southbridge, Mass.
Thompson, George	Vb	Loomfixer, Ayer Mills, Lawrence, Mass.
Torpey, Henry K. W.	IVa	See Evening, 1914.
Walker, John J.	VIb	Draftsman, Pacific Mills, Lawrence, Mass.
Walworth, Walter F.	VIb	Student, Massachusetts Institute of Technology, Boston, Mass.
Waters, Thomas W., Jr.	Va	With American Woolen Co., Lawrence, Mass.
Weinhold, William F.	IIIa	U. S. Military Service.
Whitley, Arthur M.	IIa-IIb	Superintendent, Abbot Worsted Co., Graniteville, Mass.
Wilde, Herman E.	IVa	Assistant Dyer, Washington Mills, Lawrence, Mass.
Winslow, Warren A.	IIb	Clerk, Abbot Worsted Co., Forge Village, Mass.
Wood, Samuel J.	Ia	U. S. Military Service.
Zimmer, George D.	IVa	U. S. Naval Reserve.

Day Course, 1916

Degree Graduates		
Name	Course	Occupation
Adams, Floyd W.	VI	Mechanical Engineer, The Barrett Co., New York City.
Echmalian, John G.	VI	Putnam, Conn.
Farnsworth, Harold V.	VI	U. S. Naval Reserve.
Forsyth, Ralph A.	VI	Assistant Superintendent, Appleton Company, Lowell, Mass.
Lamprey, Leslie B.	IV	Colorist, Essex Aniline Works, South Middleton, Mass.
Putnam, George I.	IV	Chief Textile Chemist and Dyestuff Purchasing Agent, Mohawk Valley Cap Allied Mills, Utica, N. Y.
Richardson, George O.	IV	U. S. Military Service.
Sanborn, Ralph L.	VI	Foreman, American Net and Twine Company, East Cambridge, Mass.

Diploma Graduates

Baker, William J.	IV	Guncotton Supervisor, E. I. du Pont de Nemours & Co., City Point, Va.
Colby, J. Tracy	VI	With F. C. Huyck & Sons, Albany, N. Y.
Cummings, Edward S.	VI	With Massachusetts Cotton Mills, Lowell, Mass.
Davieau, Alfred E.	VI	Observer, Cheney Brothers, South Manchester, Conn.
Gerrish, Henry K.	III	Task Setter, Cheney Bros., South Manchester, Conn.
Molloy, Francis H.	II	Assistant Designer, Assabet Mills, Maynard, Mass.
Morrill, Howard A.	VI	Assistant Superintendent, Whittier Mills Company, Chattahoochee, Ga.
Peabody, Roger M.	II	U. S. Military Service.
Shaber, Hyman J.	VI	See Day, 1917.
Tyler, Lauriston W.	II	U. S. Military Service.

Evening Course, 1916

Certificate Holders

Barnes, Hammond	IIIa	See Evening, 1914.
Baxter, Walter	Vb	U. S. Military Service.
Bean, Winthrop S.	IVa	Assistant Chemist, Merrimack Mfg. Co., Lowell, Mass.
Benson, George E.	Ia	Cotton Salesman, John Mallock & Co., Boston, Mass.
Billings, Rupert F.	IVa	Student, Lowell Textile School, Lowell, Mass.
Birdsall, James E.	Vb	See Evening, 1915.
Bordeleau, Georges A.	IVa	See Evening, 1915.
Bowles, Willis H.	Va	Loomfixer, Boott Mills, Lowell, Mass.

Name	Course	Occupation
Branch, Guy E.	Vb	See Evening, 1915
Brown, James H.	VIId	See Evening, 1914.
Bryden, Frederick A., Jr.	IVa	Section Hand, Pacific Print Works, Lawrence, Mass.
Burke, John J.	IVa	Leather Dyer, American Hide and Leather Company, Lowell, Mass.
Burns, Robert H.	Ia	Bookkeeper, Armour and Company, Lowell, Mass.
Bzoski, John	Vb	Boston, Mass.
Campbell, Thomas J.	IIIb	Wholesale Confectioner, Lowell, Mass.
Charbonneau, Marie A.	IIIb	Milliner, Mrs. E. Riopelle, Lowell, Mass.
Cheetham, James A.	VIa	Second Hand, Massachusetts Cotton Mills, Lowell, Mass.
Chicken, Harold M.	Ia	U. S. Military Service.
Clough, Herschel G.	IVa	Third Hand, Massachusetts Cotton Mills, Lowell, Mass.
Coburn, Elmer R.	IVa	With Acadia Mills, Lawrence, Mass.
Conley, Leander F.	IVa	U. S. Military Service.
Coolens, Leon G.	Vb	With Merrimack Manufacturing Company, Lowell, Mass.
Crompton, George E.	IVa	U. S. Military Service.
Desaillier, Adolphe	VIId	Machinist, International Steel and Ordnance Corporation, Lowell, Mass.
Flathers, George J.	IVa	Clerk, Merrimack Paper Company, Lawrence, Mass.
Fontaine, George E.	VIId	With Hamilton Manufacturing Co., Lowell, Mass.
French, Walter B.	VIa	Efficiency Man, Boott Cotton Mills, Lowell, Mass.
Gallagher, Edward J.	Va	Clerk, Universal Winding Company, Boston, Mass.
Galle, Carl W.	VIb	Draftsman, Arlington Mills, Lawrence, Mass.
Gaudette, Eugene O.	VIa	Clerk, Surgeon General's Office, War Department, Washington, D. C.
Gaulin, Achille G.	VIb	Draftsman, U. S. Cartridge Company, Lowell, Mass.
Gerry, Churchill	IVa	See Evening, 1915.
Gesing, Roland M.	VII	With Brightwood Manufacturing Company, North Andover, Mass.
Gile, Harold E.	IVb	See Evening, 1913.
Gilley, Frederic S.	IIIa	Clerk, American Woolen Company, Boston, Mass.
Guenard, Julia A.	IIIb	Inspector, U. S. Cartridge Co., Lowell, Mass.
Gunning, Alfred J.	VII	Superintendent, Mohair Department, Brown and Adams, Boston, Mass.
Gunther, George A.	IVa	Second Hand, Dyeing, American Woolen Co., Rochdale, Mass.
Haithwaite, George Q. R.	Va	Superintendent, Appleton Company, Lowell, Mass.
Hayward, Harry J.	Ia	Foreman, Textile Section, U. S. Rubber Co., Newark, N. J.
Heeley, George E.	Va	Second Hand, Tremont and Suffolk Mills, Lowell, Mass.

Name	Course	Occupation
Hendricks, Thomas A.	VIb	Machinist, U. S. Cartridge Company, Lowell, Mass.
Higginbottom, Joseph J.	VIId	Supervisor of Payroll Department, Boott Mills, Lowell, Mass.
Hodgkins, Richard D.	Ia	U. S. Military Service.
Ingle, Ernest	Va	Third Hand, Massachusetts Cotton Mills, Lowell, Mass.
Jubenville, Joseph D.	VIId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Keisling, William	Vb	U. S. Military Service.
Lambert, Mrs. Arthur (Laporte, Mary E.)	IIId	With U. S. Cartridge Company, Lowell, Mass.
Lane, Lewis D.	VIId	Fixer, Arlington Mills, Lawrence, Mass.
Larue, Isabella G.	IIId	With Lawrence Manufacturing Company, Lowell, Mass.
Lawrence, Abbott	VIId	Machinist, Bay State Street Railway Company, Lowell, Mass.
Leaver, Harry	IVa	U. S. Military Service.
Lowe, John C.	Vb	See Evening, 1912.
Lunan, Karl S.	VIa	Electrician, U. S. Naval Reserve.
Lund, Stanley W.	VIb	Mechanical Draftsman, Davis and Furber Machine Co., No. Andover, Mass.
Lynch, John	VIId	Fixer, Arlington Mills, Lawrence, Mass.
McDermott, James	VII	Cloth Examiner, U. S. Worsted Company, Lawrence, Mass.
McKittrick, Percy A.	VIa	With Saco-Lowell Shops, Lowell, Mass.
Mosher, Chester L.	VIb	U. S. Military Service.
Murphy, John	VIb	Electrician, Appleton Company, Lowell, Mass.
Nelson, James A.	Va	See Evening, 1911.
Noring, Ernest G.	VII	U. S. Military Service.
Peel, Tom	IVa	Laboratory Assistant, Brightwood Manufacturing Company, North Andover, Mass.
Pendlebury, David	Ia	See Evening, 1915.
Perron, Francis J.	IIId	See Evening, 1911.
Playdon, Roy A.	IId	With Beoli Mills, Fitchburg, Mass.
Quance, Alfred	IVa	U. S. Naval Reserve.
Rhodes, William H.	IIId	With Ayer Mills, Lawrence, Mass.
Rostron, Robert	Va	Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
Saunders, Louis P.	Vb	Second Hand, Sutton's Mills, North Andover, Mass.
Scully, Patrick F.	Vb	See Evening, 1915.
Shaw, Thomas A.	VIb	Third Hand, Lawrence Manufacturing Company, Lowell, Mass.
Smart, George A.	Vc	See Evening, 1915.
Smith, Edwin H.	IVa	Assistant Foreman of Dyeing, Waltham Bleachery and Dye Works, Waltham, Mass.
Smith, Miles H.	Vb	See Evening, 1915.
Snickers, Eugene	Ia	See Evening, 1915.
Sorenson, David P.	IIId	Dracut, Mass.
Spillane, James F.	VIa	Machinist, U. S. Cartridge Company, Lowell, Mass.
Stewart, George	VIa	See Evening, 1911.

Name	Course	Occupation
Sullivan, Joseph D.	IIIa	U. S. Military Service.
Taff, Joseph C.	VIa	U. S. Military Service.
Takahashi, Gentaro	Ia	With Suncook Mills, Suncook, N. H.
Taylor, Fred H.	Va	With J. W. Stewart and Company, Lowell, Mass.
Todd, Walter E.	VII	With A. Slater & Sons, Inc., Webster, Mass.
Tucker, Charles L.	Ia	Second Hand, Lawrence Manufacturing Company, Lowell, Mass.
Tucker, William W.	Ia	Foreman, Lawrence Manufacturing Company, Lowell, Mass.
Wainwright, Harold	IVb	See Evening, 1913.
Waring, Joseph	VIa	With Washington Mills, Lawrence, Mass.
Weisberg, Harry A.	VIb	With Arlington Mills, Lawrence, Mass.
West, Richard E.	IVa	U. S. Naval Reserve.

Day Course, 1917

Degree Graduates		
Name	Course	Occupation
Albrecht, Charles H.	IV	Chemist, Wood Worsted Mills, Lawrence, Mass.
Barlofsky, Archie	VI	Quartermaster's Department, Cambridge, Mass.
Foster, Boutwell H.	VI	Textile Engineer (Textile Section), U. S. Rubber Co., Newark, N. J.
Fuller, Allen R.	IV	Research Chemist, E. I. du Pont de Nemours and Co., Experimental Station, Wilmington, Dela.
Howarth, Charles L.	IV	Chemist, Quartermaster's Department, Boston, Mass.
Irvine, James A.	VI	Textile Inspector, Quartermaster's Department, Framingham, Mass.
Perlman, Samuel	IV	Color Chemist and Textile Expert, United Oil and Chemical Corporation, New York City.
Riggs, Homer C.	VI	U. S. Military Service.
Shaber, Hyman J.	VI	Quartermaster's Department, Boston, Mass.
Sokolosky, Henry	VI	Quartermaster's Department, Boston, Mass.
Wood, Lawrence B.	IV	Chemist, Sayles Finishing Plants, Phillipsdale, R. I.

Diploma Graduates

Berry, Wilbur F.	II	U. S. Military Service.
Matthews, Elmer C.	II	U. S. Military Service.
O'Connor, Lawrence D.	VI	Textile Inspector, Quartermaster's Department, Boston, Mass.
Ripley, George K.	II	Assistant Manager, Troy Blanket Mills, Troy, N. H.
Sjostrom, Carl G. V., Jr.	III	U. S. Military Service.
Sturtevant, Albert W.	IV	Ordnance Department, Middletown, Conn.
Sutton, Leslie E.	I	Ordnance Department, Worcester, Mass.

Evening Course, 1917

Certificate Holders

Allen, William J.	IVb	See Evening, 1913.
Atkinson, Reginald C.	IVb	See Evening, 1913.
Axon, Charles M.	Vb	Loomfixer, Marland Mills, Andover, Mass.
Bamford, John T.	IIIa	Pattern Weaver, Sutton's Mills, North Andover, Mass.
Barrows, Ariston K.	Ia	See Evening, 1913.
Barry, Alma M.	IIIb	Lowell, Mass.
Bohne, Frederick C.	Vb	With Pacific Print Works, Lawrence, Mass.
Bottomley, Wilfred	VIa	Electrician, Washington Mills, Lawrence, Mass.
Branch, Guy E.	VI	See Evening, 1913.
Brandy, William F.	IIb-IVb	See Evening, 1914.

Name	Course	Occupation
Bruce, William	VII	With Wood Worsted Mills, Lawrence, Mass.
Cheney, Raymond S.	VIa	Salesman and Mechanical Engineer, Treat Hardware and Supply Co., Lawrence, Mass.
Coolens, Julvin J.	IIIa	With Merrimack Manufacturing Co., Lowell, Mass.
Coolens, Leon G.	Va	See Evening, 1916.
Corkery, Raymond F.	Va	U. S. Military Service.
Dawson, Walter F.	IVa	Machinist, U. S. Cartridge Co., Lowell, Mass.
Dean, Arthur	VII	Overseer, U. S. Worsted Co., Lowell, Mass.
Deleu, Arthur	Vb	With Wood Worsted Mills, Lawrence, Mass.
DeSpencer, John	VIb	With Ayer Mills, Lawrence, Mass.
Drescher, George J.	Vb	Loomfixer, George E. Kunhardt, Lawrence, Mass.
Durgin, Edward F.	VIa	Clerk, Merrimack Paper Co., Lawrence, Mass.
Fleming, Carl S.	Ia	U. S. Military Service.
Fortier, Alderic W.	Va	With Boott Cotton Mills, Lowell, Mass.
French, Raymond C.	Vb	Machinist, Boston Navy Yard, Boston, Mass.
Fritz, Carl C.	VII	Second Hand, Ayer Mills, Lawrence, Mass.
Funnell, James C.	Va	Boston, Mass.
Gilley, Frederic S.	IIB	See Evening, 1916.
Grimes, Henry D.	IVa	Assistant Chemist, Washington Mills, Lawrence, Mass.
Hall, William H., Jr.	IIIa	Inspector, Ordnance Department, Bridgeport, Conn.
Hayward, Harry J.	Ia	See Evening, 1916.
Herrick, Robert F., Jr.	Ia	With Saco-Lowell Shops, Lowell, Mass.
Herron, Alexander T.	IVb	See Evening, 1913.
Hibbert, George E.	IIIa	See Evening, 1910.
Howker, John	IIIa	See Evening, 1913.
Innes, Archibald K.	IVa	With Arlington Mills, Lawrence, Mass.
Kannheiser, Frank J.	IVa	With Washington Mills, Lawrence, Mass.
Kearney, Thomas K.	Ia	With Massachusetts Cotton Mills, Lowell, Mass.
Kennedy, Leo J.	IVa	Clerk, Avery Chemical Co., Wamesit, Mass.
Kenney, Raymond J.	IVa	Stenographer, Lowell Textile School, Lowell, Mass.
Kiessling, Robert H.	Ia	U. S. Military Service.
Kitchen, Walter G.	Ib	Second Hand, Faith Knitting Co., Averill Park, N. Y.
Langevin, George F.	VIa	See Evening, 1915.
Langford, Frederick T.	VII	Second Hand, Ayer Mills, Lawrence, Mass.
LaVigne, Andre J.	VIb	Draftsman, City of Lowell, Lowell, Mass.
Laycock, Berry	VII	Superintendent, U. S. Worsted Co., Lowell, Mass.
Leaver, Frederick W.	Ia	Clerk, Agent's Office, Pacific Mills, Lawrence, Mass.

Name	Course	Occupation
Louporet, George J.	IVa	With Heinze Electric Co., Lowell, Mass.
Lowney, May E. P.	VIa	Inspector, Massachusetts Industrial Accident Board, Boston, Mass.
Lutz, Alwin	VIa	Designing Draftsman, Lawrence Machine Co., Lawrence, Mass.
Lutz, Leo A.	Vb	With Wood Worsted Mills, Lawrence, Mass.
Lutz, Paul P.	Vb	Section Hand, Pacific Mills, Lawrence, Mass.
McCann, James J.	Vb	With Pacific Mills, Lawrence, Mass.
McDermott, Thomas R.	IVa	U. S. Military Service.
MacGeoch, James A.	IIIa	With Pacific Mills, Lawrence, Mass.
McGill, Francis J.	VII	U. S. Military Service.
McNabb, Alice M.	IIIb	With Tremont and Suffolk Mills, Lowell, Mass.
Magee, William J.	IVa	Assistant Chemist, State Department of Health, Lawrence, Mass.
Mathews, William T.	Ia	Cotton Classer, Hamilton Manufacturing Co., Lowell, Mass.
Mears, Lewis N.	IVb	See Evening, 1914.
Meinelt, Theodore E.	VIa	Electrician, Pacific Mills, Lawrence, Mass.
Merrill, Gilbert R.	VIa	Student, Lowell Textile School, Lowell, Mass.
Moffatt, Elmer W.	Ia	Fixer, Sharp Manufacturing Co., Lowell, Mass.
Morin, Alphonse W.	VIa	With B. & M. Repair Shop, North Billerica, Mass.
Naud, Mary A.	IIIb	Inspector, U. S. Cartridge Co., Lowell, Mass.
Noring, Ernest G.	Vb	See Evening, 1916.
O'Brien, Richard C.	IIIa-VII	Travelling Salesman, Percy A. Legge, Boston, Mass.
Parent, Louis J.	Ib	U. S. Military Service.
Parker, Charles L.	IVa	Overseer, Pacific Print Works, Lawrence, Mass.
Parkhurst, George E.	IVa	Laboratory Assistant, Massachusetts State Department of Health, Lawrence, Mass.
Paul, Frank M.	Ia	Second Hand, Hamilton Manufacturing Co., Lowell, Mass.
Pekarski, Louis A.	Vb	With Washington Mills, Lawrence, Mass.
Perron, Francis J.	VII	See Evening, 1911.
Pihl, Mansfred M.	VIa	See Evening, 1914.
Prisley, Frederick A.	IVa	U. S. Military Service.
Protopapas, Taxiarchis Z.	IIIb	With Boott Cotton Mills, Lowell, Mass.
Ready, William C.	VIb	Student, Massachusetts Institute of Technology, Boston, Mass.
Roberts, Kenneth B.	VIb	Student, Lowell High School, Lowell, Mass.
Rutledge, Robert J.	Ia-Va	U. S. Military Service.
Sawyer, Samuel S.	VIa	U. S. Military Service.
Schultz, Hughey B	VIb	Machinist, Kunhardt Mills, Lawrence, Mass.
Schuster, Raymond H.	VII	U. S. Military Service.
Schwarzenberg, Raymond C.	VIb	Machinist, S. R. Bailey and Co., Amesbury, Mass.
Sharples, Lloyd K.	VII	U. S. Military Service.

Name	Course	Occupation
Shaw, William	Ia	See Evening, 1913.
Slater, Arthur C.	IVa	U. S. Military Service.
Smith, Joseph	VIId	Machinist, U. S. Cartridge Co., Lowell, Mass.
Smith, Miles H.	VII	See Evening, 1915.
Sullivan, Edward B.	Va	With Hamilton Manufacturing Co., Lowell, Mass.
Talbot, Joseph	IVa	Overseer of Dyeing, Pacific Print Works, Lawrence, Mass.
Thyng, Thomas C.	VIa	Engineer, Pacific Mills, Lawrence, Mass.
Todd, Walter E.	Vb	See Evening, 1916.
Toepler, Carl	IVa	Student, Lowell Textile School, Lowell, Mass.
Tremblay, Joseph A.	IVa	Fixer, U. S. Cartridge Co., Lowell, Mass.
Wheeler, Harry L.	Ia	Paymaster, Merrimack Manufacturing Co., Lowell, Mass.
Whiteoak, Percy	IIb	With Brookside Worsted Mills, West Chelmsford, Mass.
Whittier, Arthur P.	Va	Assistant Overseer, T. Martin and Bro. Manufacturing Co., Lowell, Mass.
Wilkinson, William L.	IIIa	U. S. Military Service.
Wilton, George H.	IIIa	With M. T. Stevens and Sons' Co., No. Andover, Mass.
Winkler, Adolph J.	VII	Student, Brooklyn Polytechnic Institute, Brooklyn, N. Y.
Winship, Roger	Va	U. S. Military Service.
Yeates, Percy E.	Ia	Clerk, William Whitman Co., Inc., Boston, Mass.

POSITIONS ATTAINED BY DAY GRADUATES

Directors of textile schools	1
Teachers	9
Mill vice-presidents	2
Mill treasurers and agents	10
Mill superintendents	28
Mill assistant superintendents	14
Mill foremen of departments	12
Assistants to superintendents	1
Mill auditors and accountants	3
Mill clerks	1
Second hands	4
Managers	24
Textile designers and fabric experts	19
Purchasing Agents	3
In commission houses	5
Salesmen	8
Chemists, dyers and chemical salesmen	54
In U. S. Military Service	33
In U. S. Civilian Service	16
In state employ	1
Textile Manufacturing, unassigned	14
Industrial engineering	9
Mill engineering	9
Civil engineering	1
Trade journalists	3
In business, textile distributing or incidental thereto	5
Other business	17
Married women	3
Employment not known	23
Deceased	9
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Total	341

CONTENTS

Administration	11, 112
Advanced Standing	58
Alumni Association	121
Application Blanks	59, 225, 226
Athletics	51
Attendance	62
Attendance Card	59
Awards of Merit	61
Board, Cost of	64
Buildings	19
Bulletins and Catalogue	64
Calendar	4, 5
Certificate for Evening Courses	113
Conduct	62
Corporation	7
COURSES OF INSTRUCTION :	
Day Classes	65
Evening Classes	112
Courses for Women	66
Degree Courses	52, 61
Departments	25, 81
Diploma Courses	53, 62
Entrance Examinations	53
Entrance Requirements for Day Students	54, 80
Equipment	25
Evening Classes	112
Examinations	59
Fees	59
General Committees	9
General Information	58
Graduate Course	60
Graduates, Day Class, 1917	123
Graduates, Evening Class, 1917	125
Graduates, Alphabetical Register	146
Graduates, Class Register	174
Instructors	11, 118
Introduction	15
Library	63
Lockers	64
Medal, National Association of Cotton Manufacturers	62
Object of the School	15
Officers of Administration and Instruction	118
Olney Chemical Alumni	121
Partial Courses	60
Prizes for Chemistry and Dyeing	61
Records and Reports of Standing	60
Register of Day Students	128
Register of Evening Students	131
Registration	59
Residence and Expenses	64
Rooms, Cost of	64
Sessions	63
SUBJECTS OF INSTRUCTION :	
Textile Engineering Department	81
Chemistry and Dyeing Department	89
Textile Design and Power Weaving Department	99
Language and History Department	102
Cotton Yarn Department	104
Woolen and Worsted Yarn Department	106
Finishing Department	108
Physical Culture	111
Thesis	60
Trustees	7
Tuition	59

BULLETIN

OF THE

Lowell Textile School

LOWELL, MASS.

Issued Quarterly

1918-1919

Entered August 26, 1902, at Lowell, Mass., as second class matter,
under Act of Congress of July 16, 1894

Moody Street and Colonial Avenue

BOSTON
WRIGHT & POTTER PRINTING CO., STATE PRINTERS
32 DERNE STREET
1918

PUBLICATION OF THIS DOCUMENT
APPROVED BY THE
SUPERVISOR OF ADMINISTRATION.

TRUSTEES OF THE LOWELL TEXTILE SCHOOL.

Officers.

ALEXANDER G. CUMNOCK, *Chairman.*

ARTHUR G. POLLARD, *Vice-Chairman.*

CHARLES H. EAMES, *Clerk.*

Trustees.

On the part of the Commonwealth of Massachusetts
Dr. PAYSON SMITH, Commissioner of Education.

On the part of the City of Lowell
Hon. PERRY D. THOMPSON, Mayor of Lowell.

FOR TERM ENDING JUNE 30, 1919.

WILLIAM R. MOORHOUSE, Boston, Color Chemist, Cassella Color Company, class of 1901.

HUGH J. MOLLOY, Lowell, Superintendent of Public Schools.

WILLIAM A. MITCHELL, Lowell, Agent, Massachusetts Cotton Mills, Boston Corporation, mills at Lowell.

T. ELLIS RAMSDELL, Housatonic, Agent, Monument Mills, class of 1902.

REGINALD A. WENTWORTH, Lowell, United States Cartridge Company.

FOR TERM ENDING JUNE 30, 1920.

GEORGE H. SAYWARD, Winchester, Treasurer, Pemberton Company, Boston Corporation, mills at Lawrence.

FREDERICK A. FLATHER, Lowell, Treasurer, Boott Mills, Boston corporation, mills at Lowell.

WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Franklin, Uxbridge.

HENRY A. BODWELL, Andover, Superintendent, Smith and Dove Manufacturing Company, class of 1900.

EDWARD H. ABBOT, Graniteville, Vice-President and Agent, Abbot Worsted Company, class of 1904.

FOR TERM ENDING JUNE 30, 1921.

ALEXANDER G. CUMNOCK, Lowell, Treasurer, Appleton Company, Boston corporation, mills at Lowell.

ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.

GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer.

ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.

HERBERT WATERHOUSE, North Chelmsford.

OFFICERS OF ADMINISTRATION AND INSTRUCTION.

Administration.

CHARLES H. EAMES, S.B., President of the School.
 WALTER B. HOLT, Bursar. STELLA F. MORRILL, Registrar.
 FLORENCE M. LANCEY, Librarian. AGNES L. TAISEY, Secretary.

Chiefs of Departments.

LOUIS A. OLNEY, S.B., M. S., Professor of Chemistry, in charge of Department of Chemistry and Dyeing.
 EDGAR H. BARKER, in charge of Department of Woolen and Worsted Yarns.
 ARTHUR A. STEWART, in charge of Department of Finishing.
 STEPHEN E. SMITH, in charge of Department of Cotton Yarns and Knitting.
 HERMANN H. BACHMANN, in charge of Department of Textile Design and Power Weaving.
 LESTER H. CUSHING, A.B., in charge of Department of Languages, History and Economics.
 HERBERT J. BALL, S.B., in charge of Department of Textile Engineering.

Instructors.

ROBERT R. SLEEPER, Instructor in Dyeing.
 ULYSSES J. LUPIN, S.B., Instructor in Mathematics, Physics and Electrical Engineering.
 CHARLES H. JACK, Instructor in Machine Shop Practice.
 ELMER E. FICKETT, S.B., Instructor in Quantitative Analysis.
 EDWARD K. HULL, Instructor in Mechanical Drawing and Mechanism.
 MARTIN J. HOELLRICH, Instructor in Weaving.
 C. LEONARD GLEN, Instructor in Finishing.
 DR. LEWIS P. CHAPIN, Instructor in General Chemistry and Qualitative Analysis.
 FREDERICK S. BEATTIE, Instructor in Organic Chemistry.
 JOHN C. LOWE, Evening Instructor in Woolen and Worsted Yarns.
 JOHN N. HOWKER, Evening Instructor in Wool Sorting and Scouring.
 C. WARREN HOWE, Evening Instructor in Machine Shop Practice.
 E. ELIZABETH WHITNEY, Evening Instructor in Freehand Drawing.
 GEORGE GOODCHILD, Evening Instructor in Cotton Yarns.
 EDITH C. MERCHANT, Evening Instructor in Freehand Drawing.

EVENING CLASSES.

COURSES.

The evening classes offer to those who are employed during the day instruction pertaining to their daily work or instruction in such branches as are related to the particular department in which they are engaged. Thus, one who is a weaver can carry on a course in spinning or designing. A dyer or an employee in a dye house can, by means of a course in chemistry and dyeing, acquire a better and more accurate knowledge of the chemicals and materials he is handling during the day. A machinist working on a lathe, planer, milling machine or at a bench, may add to his accomplishments a knowledge of drafting, mechanism, and other subjects. This means that any man, young or old, who has the fundamentals of a common school education, and who has the determination to advance, may secure in proper sequence the stepping stones to the place toward which he is looking, and rise to even the highest positions in the industry.

The courses of the evening school are varied, and arranged to meet the special needs of those engaged in the industry. They vary in length from one year to three, and at the completion of each course, the certificate of the school is awarded, providing, however, that the student has been in attendance in the course during the year for which the certificate is granted.

The evening classes commence the first Monday of October and continue for twenty weeks. The school is open on four evenings each week during the period mentioned, except when the school is closed for holiday recesses.

Courses are offered in —

- I. a. Cotton Spinning — 2 and 3 years.
 b. Knitting — 1 year.
- II. a. Woolen Spinning — 2 years.
 b. Worsted Spinning — 3 years.
- III. a. Textile Design — 3 years.
 b. Freehand Drawing — 3 years.

IV. Chemistry and Dyeing.

- a. Elementary Chemistry — 2 years.
General Chemistry, including Inorganic and Organic.
Qualitative Analysis.
- b. Textile Chemistry and Dyeing — 3 years.
Lectures in Textile Chemistry and Dyeing.
Laboratory Work in Dyeing.
- c. Analytical Chemistry — 3 years.
Laboratory Work and Lectures in Quantitative Analysis.
- d. Textile and Analytical Chemistry — 4 years.
Lectures in Textile Chemistry and Dyeing.
Laboratory Work in Analytical Chemistry.

In order to take Course IVb, IVc, IVd, candidates must have certificate from Course IVa, or show by examination or approved credentials that they have taken the equivalent work covered by this course.

- V. a. Cotton Weaving — 1 year.
- b. Woolen and Worsted Weaving — 1 year.
- c. Dobby and Jacquard Weaving — 1 year.

VI. Elements of Engineering — 3 years.

Mechanics.

Steam.

Electricity.

Machine Shop — 2 years.

Mechanical Drawing — 3 years.

- VII. a. Cotton Finishing — 1 year.
- b. Woolen and Worsted Finishing — 1 year.

Entrance Requirements.

All applicants to the evening classes must understand the English language and simple arithmetic. Those who are graduates of a grammar or high school are admitted upon certificate. Those who cannot present such a certificate are required to take examinations in the subjects of English and arithmetic. In the examination in English a short composition must be written on a given theme, and a certain amount must be written from dictation. In the examination in arithmetic the applicant must show suitable proficiency in addition, subtraction, multiplication, division, common and decimal fractions, percentage, ratio and proportion. Opportunity to register or to take these examinations is offered each year, generally on the Thursday evenings of the two weeks previous to the opening of the evening school.

Registration.

Before entering the class a student must fill out an attendance card, which can be obtained at the office or from the instructors in the various departments.

Any student who has filed an attendance card and who wishes to change his course must notify the office before making the change.

Fees and Deposits.

All evening courses are free to residents of Lowell. To those outside of Lowell the fee is \$10 per year for *each course of two nights per week*. Students taking two courses or attending courses requiring more than two nights per week are required to pay \$15 per year for three nights and \$20 for four nights.

All fees and deposits must be paid in advance.

All students, whether from Lowell or not, taking Course (a), Chemistry and Dyeing Department, are required to make a deposit of \$5 at the commencement of the course. A deposit of \$10 will be required of all students taking Course (b), (c) or (d). This is to cover the cost of laboratory breakages, chemicals, apparatus, etc., and at the end of the year any unexpended balance is returned, or an extra charge made for the excess breakage.

Every student who takes the chemistry and dyeing course must check up his desk with the instructor of that department when he leaves the school. Any student not doing so will be charged 50 cents.

Supplies.

Students must provide their own books, stationery, tools, etc., and pay for any breakage or damage that they cause.

Student's supplies will be sold from the storeroom every evening school night from 6.45 to 7.15 P.M.

I. Cotton Spinning — 2 Years.

In this course the cotton is taken as it is raised in various parts of the world, and instruction is given in the various processes on all the machines, from the gin to the spinning frame and mule. For one who desires only a study of combing, carding or spinning, it is possible to take that part of the course in which he is particularly interested, although it is believed to be better for a spinner to know something about the machines and processes

that precede his own. If one all his life has worked with one grade of cotton, an understanding of the other types and grades of cotton, of their properties, methods of cultivation, localities where grown, and uses to which they are adapted, cannot but help to broaden his intellect and make him a more valuable man.

A detailed study of the machines, including speeds, drafts and settings, explains and makes clear to the student the arbitrary orders of the mill overseer. There is not time in the mill for explanations as to why a certain change gear is used or how the draft constant is determined. The relative advantages of the many types of mechanisms are considered.

IIa. Woolen Spinning — 2 Years.

IIb. Worsted Spinning — 3 Years.

In both courses the students of the first year pursue the same class work, covering instruction in the many kinds of wool, the varying properties of the fibers, trade terms, sorting, scouring, carbonizing, etc. This work is followed by instruction in carding and mule spinning for the woolen students. For those desiring to study worsted yarn manufacture work is taken up on the worsted card, followed by gilling and combing and processes of top making. The last year of this course is devoted to a study of worsted yarn manufacture on both the English and French systems.

Thus in three years' time one may acquire a thorough course of instruction in worsted yarn manufacturing, or, in two years, a knowledge of woolen yarn manufacture. He is thus able to obtain a knowledge of machines and processes that could not be obtained in the ordinary course of events in the mill.

IIIa. Textile Design — 3 Years.

For one who is working in the design, pattern or weave room, the course in design offers instruction in the great variety of weaves, in cloth construction and analysis. It is practically impossible, under ordinary circumstances, for one to acquire in the mill a knowledge of the construction of the many textile fabrics. Where a person spends the greater portion of his life in one or two mills, his knowledge of fabrics is confined to those made in the mills in which he works. A course in designing supplements the experience received during the day, thus broadening a person's textile knowledge as well as making him better acquainted with the fabrics upon which he works daily.

IIIb. Freehand Drawing — 3 Years.

In the course in freehand drawing, instruction is given in the drawing from models, casts and designs. Work is taken up in charcoal and also in colors. This course has appealed to many young women of the city, and it is believed that this is a most fortunate opportunity for both young women and young men of Lowell to acquire the elements of artistic designing.

IVa. Elementary Chemistry — 2 Years.

General Chemistry, including Inorganic and Organic.
Qualitative Analysis.

IVb. Textile Chemistry and Dyeing — 3 Years.

Lectures in Textile Chemistry and Dyeing.
Laboratory Work in Dyeing.

IVc. Analytical Chemistry — 3 Years.

Laboratory Work and Lectures in Qualitative Analysis.

IVd. Textile and Analytical Chemistry — 4 Years.

Lectures in Textile Chemistry and Dyeing.
Laboratory Work in Analytical Chemistry.

Hardly any branch of applied science plays so important a part in our industrial world as chemistry. Many large mills employ the chemist as well as the dyer, and with the great progress which is being made in the manufacture and application of dyestuffs, a basic knowledge of chemistry becomes an absolute necessity to the dyer. Within a comparatively short distance from Lowell are establishments employing men who require some knowledge of chemistry but who may not necessarily use dyes. Some find a knowledge of analytical chemistry helpful in their every-day work.

To meet these varying needs of our industrial community, the school offers a two-year course in general chemistry, organic and inorganic, which may be followed by any one of three courses, viz., textile chemistry and dyeing, analytical chemistry, and textile and analytical chemistry. In order to take Courses IVb, IVc or IVd, candidates must have a certificate from Course IVa, or show by examination or approved credentials that they have taken the equivalent of the work covered by this course.

Va. Cotton Weaving — 1 Year.

Vb. Woolen and Worsted Weaving — 1 Year.

Vc. Dobby and Jacquard Weaving — 1 Year.

These are called weaving courses, but in reality they might more properly be called courses in loom fixing, for particular attention is given to the mechanism of the looms, the timing of the various parts, and the adjustments possible to produce desired results. Here again, is an opportunity for students to fix, dismantle, erect and adjust looms in a way that could not be tolerated in any mill. Frequently students come to the classes with the knowledge that certain adjustments must be made upon a loom if certain results are to be obtained, but the reason for these is not known. The school offers the machine, time and instructor in order that the weaver or loomfixer may determine for himself the reason for some rule which he practices in his daily work. Not only can he become more familiar with the loom upon which he works every day, but he can study the operations of many other makes of looms.

VIa. Elements of Engineering — 3 Years.

VIb. Mechanical Drawing — 3 Years.

VIc. Machine Shop Practice — 2 Years.

These courses have been arranged with the object of offering to those engaged in the mechanical and electrical departments of our mills opportunities to learn something concerning the theory underlying the many practical methods which they pursue during the day.

Under the head of elements of engineering is given instruction in mechanics and mechanism of machines for one year, followed by a year's course on steam boilers and engines with the auxiliary apparatus found in a modern steam plant. In the third year a brief course in applied electricity takes up, as far as the time will permit, instruction in alternating and direct current generators, motors and apparatus.

For one having occasion to make a sketch or detail drawing for the purposes of illustration or instruction, or for one who is daily required to work from a drawing or blue print, the course in mechanical drawing is offered. It first lays a foundation of the principles of mechanical drawing, and follows this with two years' work in drawing directly from parts of machines, preparing both the detail and the assembly drawing.

The machine shop course is almost self-explanatory. The school has one of the best equipped shops for instruction purposes in this vicinity. Nearly all of the standard machine tools are represented, and it is possible to do almost any kind of machine tool work which comes within the range of the tools.

Thus it becomes possible for one who may be working at the bench during the day to learn how to operate a lathe or other tool, or for a lathe hand to acquire a knowledge of a planer, shaper, milling machine, grinder, etc. A man who has a knowledge of the special machine which he operates may by means of this course become a more intelligent machinist. He should supplement this course with the courses in mechanical drawing and mechanism in order that his training for an all-round machinist or mechanic may be more complete.

VIIa. Cotton Finishing — 1 Year.

VIIb. Woolen and Worsted Finishing — 1 Year.

In these courses machine work is supplemented by lectures and discussions pertaining to the many finishes given to fabrics. The action of soaps, water, steam, heat and cold upon cloth containing one fiber or combinations of fibers as used in commercial fabrics is carefully studied. These courses also help the finisher to broaden his knowledge of textile fabrics.

OLNEY CHEMICAL ALUMNI OF THE LOWELL TEXTILE SCHOOL.

This association was organized in 1898 for the purpose of keeping its members in closer relationship with each other and with the school.

The membership consists of evening graduates from any of the advanced courses in chemistry and dyeing of the Lowell Textile School, and is composed of thirty members at present.

The annual meeting is held during the winter months and the annual reunion is held the third Saturday of June at a place selected by the Board of Control.

OFFICERS.

President, SAMUEL J. NICHOL, Lowell, Mass.

Vice-President, JAMES H. SPURR, Jr., Lawrence, Mass.

Secretary and Treasurer, ALEXANDER T. HERRON, Lawrence, Mass.

BOARD OF CONTROL.

HARRY BUCKLEY, Methuen, Mass.

JAMES W. MYERS, Lowell, Mass.

SAMUEL STOTT, Methuen, Mass.

GEORGE STEWART, Lowell, Mass.

This association will offer each year a book prize to the evening graduate who attains the highest standing in any one of the advanced courses of the chemistry and dyeing department.

For information regarding this association please apply to Alexander T. Herron, 55 Bodwell Street, Lawrence, Mass.

The winner of this prize for 1918 was Tom Peel, Lawrence, Mass.

EVENING CLASS OF 1918.

Certificates awarded as follows, April 10, 1918:—

Course Ia — 3 Years (Cotton Spinning).

John Howker,	Lowell, Mass.
Thomas Kevin Kearney,	Lowell, Mass.
William Thomas Mathews,	Lowell, Mass.
Herbert Ernest Palm,	Lowell, Mass.

Course Ia — 2 Years (Cotton Spinning).

John Petty,	Methuen, Mass.
Joseph Edward Rousseau,	Lowell, Mass.
Edward Harris Searle,	Methuen, Mass.
Alvin Edward Sykes,	Lowell, Mass.

Course IIb — 3 Years (Worsted Spinning).

Ervin Davis,	Lawrence, Mass.
Fred Newton Thomas,	Methuen, Mass.

Course IIIa — 3 Years (Textile Design).

William Gavin Hamilton,	Lowell, Mass.
Harold Irvine Kellett,	Lawrence, Mass.
Robert Francis Logan,	Lawrence, Mass.
Charles Francis McGill,	Lowell, Mass.

Course IIIb — 3 Years (Freehand Drawing).

David Henry Dwyer,	Lowell, Mass.
Philomena Ursula Labatte,	Lowell, Mass.
Marie Louise Cecile Picard,	Lowell, Mass.

Course IVa — 2 Years (Elementary Chemistry).

John William Armstrong,	Lowell, Mass.
Albert Henry Blades,	Lawrence, Mass.
George Francis Fairburn,	Lawrence, Mass.
Harry Dudley Hardy,	Nashua, N. H.
William Higgins,	Lawrence, Mass.
Walter Duston Lowell,	Methuen, Mass.
Ralph Ward Markham,	Lowell, Mass.
Michael Daniel Morgan,	Lowell, Mass.
William Henry Rhodes,	Ward Hill, Mass.
William Sheriff, Jr.,	Lawrence, Mass.
Edmund Aloysius Storin,	Lowell, Mass.

Course IVb — 3 Years (Textile Chemistry and Dyeing).

Frederick Alwin Bryden, Jr.,	.	.	.	.	.	North Andover, Mass.
Andrew Neel,	.	.	.	.	.	Lawrence, Mass.
Tom Peel,	.	.	.	.	.	North Andover, Mass.
George Alexander Preble,	.	.	.	.	.	Lowell, Mass.
Victor Emanuel Swanson,	.	.	.	.	.	Lowell, Mass.
Richard Edward West,	.	.	.	.	.	Lowell, Mass.

Course Va — 1 Year (Cotton Weaving).

William Hills,	.	.	.	.	.	Lowell, Mass.
Leo Raymond Riley,	.	.	.	.	.	Lowell, Mass.

Course Vb — 1 Year (Woolen and Worsted Weaving).

James Albert Bardsley,	.	.	.	.	.	Lawrence, Mass.
Harold Edwin French,	.	.	.	.	.	Methuen, Mass.
William Walker,	.	.	.	.	.	Lowell, Mass.
William Henry Warburton,	.	.	.	.	.	Lowell, Mass.
Herbert Daniel Yeomans,	.	.	.	.	.	Lowell, Mass.

Course VIa — 3 Years (Elements of Engineering).

William Edward Bamber,	.	.	.	.	.	Lowell, Mass.
Joseph John Higginbottom,	.	.	.	.	.	Lowell, Mass.
Nathan Harrison Morrison,	.	.	.	.	.	Lowell, Mass.
Joseph Moss,	.	.	.	.	.	Lowell, Mass.
Walter Ambrose Raney,	.	.	.	.	.	Lowell, Mass.

Course VIb — 3 Years (Mechanical Drawing).

William Greenwood,	.	.	.	.	.	Lowell, Mass.
Charles Ward,	.	.	.	.	.	Lawrence, Mass.
Walter Robert Whitley,	.	.	.	.	.	Lawrence, Mass.

Course VIc — 2 Years (Machine Shop Practice).

John William Blanchard,	.	.	.	.	.	Lowell, Mass.
Joseph Carruthers, Jr.,	.	.	.	.	.	Lowell, Mass.
Achille Gabriel Gaulin,	.	.	.	.	.	Lowell, Mass.
Armand Seraphin Gervais,	.	.	.	.	.	Lowell, Mass.
Charles James Lorigan,	.	.	.	.	.	Lowell, Mass.
Charles Ortel,	.	.	.	.	.	Lowell, Mass.
Albert Taylor,	.	.	.	.	.	North Chelmsford, Mass.

Course VIIa — 1 Year (Cotton Finishing).

John Henry Barrett,	.	.	.	.	.	Lowell, Mass.
William Henry McVickar,	.	.	.	.	.	Lowell, Mass.
George Stewart,	.	.	.	.	.	Lowell, Mass.

Course VIIb — 1 Year (Woolen and Worsted Finishing).

Harris Midwood,	Lowell, Mass.
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Schedule of Evening Classes, 1918-19.

	Monday.	Tuesday.	Thursday.	Friday.
Cotton yarns:				
First year,	8.05-9.00	-	-	7.00-7.55
Second year,	7.00-7.55	8.05-9.00	-	-
Third year,	7.00-7.55	8.05-9.00	-	-
Wool yarns:				
First year,	8.05-9.00	-	-	7.00-7.55
Second year,	7.00-7.55	8.05-9.00	-	-
Third year,	7.00-7.55	8.05-9.00	-	-
Design:				
First year,	-	7.00-7.55	-	8.05-9.00
Second year,	8.05-9.00	-	-	8.05-9.00
Third year,	-	7.00-7.55	-	7.00-7.55
Free hand drawing:				
First year,	7.00-9.00	-	7.00-9.00	-
Second year,	-	7.00-9.00	-	7.00-9.00
Third year,	-	7.00-9.00	-	7.00-9.00
Elementary chemistry:				
First year,	-	7.00-7.55	7.00-9.00	-
Second year,	7.00-9.00	7.00-7.55	-	7.00-9.00
Analytical chemistry:				
First year,	7.00-9.00	-	7.00-9.00	7.00-9.00
Second year,	7.00-9.00	-	7.00-9.00	7.00-9.00
Third year,	7.00-9.00	-	7.00-9.00	7.00-9.00
Textile chemistry:				
First year,	7.00-9.00	-	7.00-9.00	-
Second year,	7.00-9.00	7.00-9.00	7.00-9.00	7.00-9.00
Third year,	7.00-9.00	7.00-9.00	7.00-9.00	7.00-9.00
Cotton weaving:				
First year,	7.00-7.55	8.05-9.00	-	-
Second year,	-	7.00-7.55	-	8.05-9.00
Woolen weaving:				
First year,	7.00-7.55	8.05-9.00	-	-
Second year,	-	7.00-7.55	-	8.05-9.00
Mechanics,	7.00-7.55	-	-	7.00-7.55
Mathematics,	8.05-9.00	-	-	8.05-9.00
Strength of materials,	8.05-9.00	-	-	8.05-9.00
Steam,	8.05-9.00	-	-	8.05-9.00

Schedule of Evening Classes, 1918-19 — Concluded.

	Monday.	Tuesday.	Thursday.	Friday.
Electricity,	7.00-7.55	-	-	7.00-7.55
Mach. Drawing:				
First year,	-	7.00-9.00	7.00-9.00	-
Second year,	7.00-9.00	-	-	7.00-9.00
Third year	7.00-9.00	-	-	7.00-9.00
Cotton finishing,	8.05-9.00	-	-	8.05-9.00
Woolen and worsted finishing, . .	8.05-9.00	-	-	8.05-9.00

BULLETIN

OF THE

Lowell Textile School

LOWELL, MASS.

Issued Quarterly



1918-1919

Entered August 26, 1902 at Lowell, Mass., as second class matter
under Act of Congress of July 16, 1894

Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3,
1917, authorized October 21, 1918.

Moody Street and Colonial Avenue

BOSTON
WRIGHT & POTTER PRINTING CO., STATE PRINTERS
32 DERNE STREET
1918

STUDENT ARMY TRAINING CORPS AT THE LOWELL TEXTILE SCHOOL.

The work of the first term of the school year 1918-1919 at the Lowell Textile School has been devoted to the training of young men for the various officers' schools of the army, as prescribed by the War Department's plan for the Student Army Training Corps. To meet the requirements of the academic training set forth by the Committee on Education and Special Training of the War Department, only slight modifications



of the regular curriculum were necessary, for the reason that the same sort of a fundamental scientific instruction which has been successful in training young men for the textile industry was found desirable in the training of officers. This means that from the viewpoint of the school the pupil during this time has not pursued a large number of courses of instruction which are irrelevant to his textile training. Consequently the second term's work, while returning to the pre-war program, will continue substantially the student's work of the past term.

The record of events during the present school year, having to do with the establishment of the S. A. T. C. and its continuance up to the date of demobilization on December 11, is brief and covers a period of approximately two months. In August of the present year the school was notified that it had been selected by the War Department as one of the institutions which had met the requirements for the establishment of a Students' Army Training Corps, Collegiate and Technical School Section. With the object of assisting in military instruction during the following term the school was asked to send to the officers' school at Plattsburg, for a two months' course, undergraduates who would later return to school. The following students were selected: Frank M. Sanborn, Class of 1919; Carl D. Brandt, Class of 1920; and Harold E. Clayton, Class of 1921.

They attended the officers' school, were discharged at its completion, and returned to school acting as sergeants of their companies.

Captain Charles N. Cecil, U. S. A., retired, was ordered by the War Department to the school to take command, and to be in charge of the military instruction and discipline. His skill and knowledge of military affairs, acquired from a long service in the United States army, were very effective in transforming an active body of young men into a most promising unit of the army with such speed and smoothness as to result in entire co-operation with the school departments. The accompanying illustrations give evidence of the results produced.

Several weeks previous to the opening of school the War Department made further assignments of commissioned officers to the school in the persons of Second Lieutenant Edgar W. Nichols, Second Lieutenant James K. Davis and Second Lieutenant Harold Dudgeon. Lieutenant Nichols was later appointed as personnel officer and adjutant, Lieutenant Davis as quartermaster, in addition to the command of Company B, and Lieutenant Dudgeon as ordnance officer and in command of Company A. Nearly all the detail and daily military instruction to the men devolved upon these officers. That they were successful in carrying out so full a program of military training, retaining to the end of the term the respect and support of the students, can but reflect credit upon them.

All applicants to the corps, upon the certification of the president of the school that the educational requirements for admission to the school had been met, were required to undergo the same physical examination as is demanded by the army. All of these examinations for the 124 successful applicants, in addition to some 12 rejected, were made by Dr. Ralph W. Parker of this city, appointed by the War Department as contracting surgeon for this corps. He was assisted during a part of the time by Dr. Wm. M. Jones of Lowell. That there have been no serious cases of illness in the corps, and that all members were discharged with a clean bill of health on December 11, reflects the degree of medical care given by the contracting surgeon.

In addition to those who enlisted in the S. A. T. C. there has been a naval section of 19 members, composed largely of students of last year's classes, who at that time entered the Naval Reserve. With the establishment of the S. A. T. C. these men were transferred to active duty, assigned to the Lowell Textile School, and placed under the command of Captain Cecil. They have since their transfer been under the same regulations and have had the same accommodations as have the members in the army.

On account of the prevalence of an epidemic of influenza during the last of September and the first weeks of October, the induction into service of the members of the S. A. T. C. was postponed from time to time, upon orders from the War Department, until October 15. Scholastic



work was commenced a few days later, and has continued throughout the period of service according to the prescribed program of studies.

The needs of housing and feeding have been met by making slight alteration in the interior of the school buildings, involving a new top floor and additional heating in the second story of Kitson Hall, the purchase of kitchen and mess hall equipment, and the construction of tables for the study hall located in the assembly hall of Southwick Hall. The inspection of the district construction officer showed that the space and arrangements provided would accommodate, according to army standards, 200 men in Kitson Hall, which was designated as the barracks. Tables for an equal number were placed in the Falmouth Street building,

which served as a mess hall. Between the barracks and the mess hall, and on the same floor, ample space was found in Kitson Hall extension to provide kitchen and washroom facilities. All phases of the work of the S. A. T. C. applicable to a school like this were successfully carried on under one roof, thus demonstrating the advantage of the quadrangle arrangement of buildings. Adjacent to Kitson Hall is the campus, which is a perfectly level plot of land entirely enclosed, and of sufficient area to accommodate, for drilling, 300 to 400 men.

The daily program prescribed by the Committee on Education and Special Training of the War Department was followed. The class work was commenced at 8 A.M., continuing until 12 noon. It was resumed after mess at 1.40 P.M. and continued until 4.40 P.M. On four afternoons military instruction was given, making a total of eleven hours per week. This left forty-two hours for academic work, including study and recitation periods, — a full week, but one adapted for war-time needs. The study period was from 7.15 P.M. to 9.45 P.M., and at this time the entire corps was found in the assembly hall at Southwick Hall, where tables were provided to accommodate 8 to 10 students each. During "off hours" this same hall was used as a recreation room and the "Y," which was much appreciated by all.

The changing and modification of the regular school life to meet this war-time program, and the care of housing and feeding the students within the school buildings, brought many new problems and placed additional responsibilities upon the instructing staff; but a solution was found for each problem and some instructor to take the additional care.

The entire charge of providing proper food in quality and quantity, and the selection and purchase of the necessary mess equipment, was placed upon Arthur A. Stewart, head instructor of the finishing department. He was assisted by C. Leonard Glenn, instructor in the same department. A number of the students at the time of demobilization voluntarily stated that they had gained in weight from 15 to 18 pounds, which is evidence that a satisfactory mess had co-ordinated with the military training in improving the students' physique. Providing for the social needs during "off hours," and the establishment of the "Y," was under the direction of Louis A. Olney, head of the textile chemistry department. The direction of the supervised study during the study periods was in charge of Lester H. Cushing, head of the language department. In all camps and military schools established during this war period the need of mass singing was realized, and was required as a part of the training program of the S. A. T. C. And again this new demand was successfully met, without going outside of the instructing staff of the school, by Edgar H. Barker, head of the woolen and worsted yarns department. By training and experience he was well fitted to conduct the singing program prepared by those having charge of this feature of the S. A. T. C. training. With the early cessation of hostilities and the demobilization of the S. A. T. C. the time devoted to this plan of military and academic education has hardly been sufficient to measure its success or failure. There are certain advantages and many recognized disadvantages which include problems that gave promise of solution. It nevertheless offered an opportunity for the school to lend its aid to the Allied Cause.

The return to a peace basis will mean a resumption of the regular school program on Jan. 2, 1919, and a continuance of a longer second term than usual, thus in all probability making up the work not covered during the first term. In this way students entering the school this year, or returning to continue their previous work, will ultimately lose no portion of the regular course of instruction.

BULLETIN

OF THE

Lowell Textile School

LOWELL, MASS.

Issued Quarterly

REGISTER OF PAST STUDENTS

Entered August 26, 1902 at Lowell, Mass., as second class matter
under Act of Congress of July 16, 1894
Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3,
1917, authorized October 21, 1918

Moody Street and Colonial Avenue

BOSTON

WRIGHT & POTTER PRINTING CO., STATE PRINTERS

32 DERNE STREET

1919

PUBLICATION OF THIS DOCUMENT
APPROVED BY THE
SUPERVISOR OF ADMINISTRATION.

REGISTER OF PAST STUDENTS.

The following list contains the names of all past students who have attended the day classes for at least one term. Where no address is given it indicates that letters mailed to the last known address have been returned as unclaimed. Any information regarding incorrect or missing addresses and occupations is earnestly solicited.

The course and years of attendance are given immediately after the name, except in the case of graduates, when the year of graduation is followed by a letter or letters in parentheses. "B.T.C." indicates the degree of Bachelor of Textile Chemistry; "B.T.D.", the degree of Bachelor of Textile Dyeing; "B.T.E.", the degree of Bachelor of Textile Engineering; "D," a diploma; and "C," a certificate for partial course.

The following diploma and degree courses are those which have been offered in the past and from which students have been graduated: —

Course I. — Cotton Manufacturing.

Course II. — Wool Manufacturing.

Course III. — Textile Design.

Course IV. — Chemistry and Dyeing.

Course VI. — Textile Engineering.

Particular attention is called to the separate list of past students and graduates of the Lowell Textile School who have served their country both in the Army and Navy during the recent world war.

ALPHABETICAL REGISTER.

Abbot, Edward Moseley, II, '04 (D). Vice President and Agent, Abbot Worsted Co., Graniteville, Mass.

Abbott, Fred Amos, II, 1911-14. Director and Sales Manager, Amos Abbott Co., Dexter, Me.

Abbott, George Richard, II, '08 (D). Andover, Mass.

Abbott, Guy Stanley, II, 1903-05. North Reading, Mass.

Abell, Frederick Theodore, II, 1903-05. 15 Hudson Ave., Lawrence, Mass.

Ackley, Eugene Royce, VI, 1916-17. Columbia Ave., Nashua, N. H. See Service Record.

Ackroyd, John Franklin, I, 1902-03. 449 Essex St., Lynn, Mass.

Adams, Arnold Bemis, VI, 1911-14. East Bridgewater, Mass. See Service Record.

Adams, Floyd Willington, VI, '16 (B.T.E.). Mechanical Engineer, The Barrett Co., New York City.

Adams, Henry Shaw, I, '05 (D). Treasurer and Secretary, The Springstein Mills, Chester, S. C.

Adams, Tracy Addison, IV, '11 (D). Division Superintendent, Arnold Print Works, North Adams, Mass.

Albrecht, Charles Henry, IV, '17 (B.T.C.). Chemist, Wood Worsted Mills, Lawrence, Mass.

- Alexander, Charles Henry, Jr., I, 1912-13. 4021 Swiss Ave., Dallas, Tex.
- Alexander, William Hay, VI, 1917-18. 203 Bailey St., Lawrence, Mass.
- Allen, Joseph Parsons, I, 1909-11. Manufacturer of Braids, 90 Bayley St., Pawtucket, R. I.
- Alling, Mrs. Marshall L. (White, A. Leslie), IIIb, 1908-09. 617 Westford St., Lowell, Mass.
- Alliot, Eric, I, 1912-15. 312 Paulison Ave., Passaic, N. J. See Service Record.
- Anagnos, Demetrius, I, 1907-08, 1909-10. Manager of Foreign Department, Fidelity Trust Co., Boston, Mass.
- Anderson, William, VI, 1907-10. 28 Arlington St., Malden, Mass. See Service Record.
- Andrews, Freeman Williams, IV, 1915-17. 27 Walton St., Dorchester, Mass. See Service Record.
- Andrews, Henry Billings, VI, 1913-15. 4 Leavitt St., Hingham Center, Mass.
- Arienti, Peter Joseph, IV, '10 (D). Chief Chemist, Sayles Bleacheries and Glenlyon Dye Works, Saylesville, R. I.
- Armstrong, Elias Benjamin, II, 1914-15. Agent, Hamilton Woolen Co., Southbridge, Mass.
- Arnold, William Ballou, I, 1900-01.
- Arundale, Henry Barnes, II, '07 (D). With U. S. Conditioning and Testing Co., 340 Hudson St., New York City.
- Ashkenazy, Isadore, IV, 1910-11. 345 Park St., Lawrence, Mass.
- Ashworth, Ralph William, II, 1914-18. Charlton City, Mass. See Service Record.
- Aspinwall, William Martin, I, 1910-11. 633 Main St., Pawtucket, R. I.
- Atkins, Lester Alfred, I, 1897-98.
- Avery, Charles Henry, II, '06 (D). Died January, 1913.
- Ayers, Iverne Chester, VI, 1910-12.
- Bailey, Carl Eugene, 1908-09. President and Treasurer, Franklin Mills Corp., Franklin, Mass.
- Bailey, Joseph W., I, '99 (D). Agent, Butler Mill, New Bedford, Mass.
- Bailey, Walter James, IV, '11 (D). Bayburn Cleansing Shop, Cambridge, Mass.
- Bain, William Anderson, IV, 1904-07. Dyer, Oakland Mills, Oakland, Me.
- Bajus, Helen, IIIb, 1905-08. See Knowland, Mrs. Daniel P.
- Baker, Mrs. Cecil F. (Gibbs, Charlotte M.), IIIb, 1904-05. Manhattan, Kan.
- Baker, Harold Harvey, I, 1905-07. Batesville, S. C.
- Baker, Perley Dustin, IV, 1916-17. 24 Green St., Concord, N. H. See Service Record.
- Baker, William John, IV, '16 (D). Guncotton Supervisor, E. I. duPont de Nemours & Co., City Point, Va.
- Baldwin, Arthur Lincoln, IV, '00 (D). Chemist, Monarch Chemical Laboratory, Lowell, Mass.
- Baldwin, Frederick Albert, II, '04 (D). Vice President and Factory Superintendent, Walter Blue & Co., Ltd., Sherbrooke, Que.
- Ballard, Albert Parker, IV, 1911-12. 12 Glen St., Malden, Mass. See Service Record.
- Ballard, Horace W. C. S., IV, '08 (D). Died Sept. 28, 1918.
- Barber, Winfred D'Wolfe, I, 1898-99. 80 Cedar St., Pawtucket, R. I.
- Barden, Leon Ralph, II, 1902-04. Died Dec. 24, 1915.
- Barker, Charles B., I, 1901-02. Farmington, N. H.
- Barlofsky, Archie, VI, '17 (B.T.E.). Quartermaster's Depot, Cambridge, Mass.
- Barlow, John Russell, IIIb, 1909-10. 30 School St., Lawrence, Mass.
- Barlow, Richard Eversley, IV, 1905-06. 492 Lowell St., Lawrence, Mass.

- Barnes, Hammond, I, 1914-15.** 30 Huntington St., Lowell, Mass. See Service Record.
- Barnet, Willis Gates, II, 1904-05.** 155 Lancaster St., Albany, N. Y.
- Barr, Isaac Walwin, I, '00 (D).** Manager, Mill Department, F. U. Stearns & Co., 7-9 Thomas St., New York City.
- Barron, Christopher Tennant, VI, 1904-06.** 59 Lake St., Lawrence, Mass.
- Batcheller, Floyd Newton, III, 1910-11.**
- Battis, Floyd R., IV, 1905-06.** 112 White St., East Boston, Mass.
- Bayard, Pierre Philippe, I, 1905-06.** 51 Rue Michel Ange, Paris, France. See Service Record.
- Bean, Arthur Edward, IV, 1907-09.** 53 Grove St., Haverhill, Mass.
- Beard, George Homer, IV, 1911-12.** Maple Crest, Acworth, N. H.
- Belanger, Frederick Marcotte, II, 1901-02.** 68 LaFayette Sq., Haverhill, Mass.
- Bell, William Thomas, I, 1909-11.** Fancy Goods Department, Hunter Mfg. and Com. Co., New York City, and Cotton Mill President, Rabell Mfg. Co., Selina, Ala.
- Bemis, Fred Sumner, 1905-06.** Billerica, Mass.
- Bennett, Edward Howard, II, '03 (C).** Publisher, American Wool and Cotton Reporter, Boston, Mass.
- Bennett, Herbert Bowen, II, '13 (D).** Mill Agent, Foster & Stewart Co., Inc., Willimantic, Conn.
- Berg, Ralph Arthur, IV, 1916-17.** Chelmsford, Mass. See Service Record.
- Berquest, Hugh George, II, 1915-16.** 259 Massachusetts Ave., Arlington, Mass. See Service Record.
- Berry, Wilbur French, II, '17 (D).** 30 Forest St., Worcester, Mass. See Service Record.
- Bicknell, Karl, IV, 1904-07.** Died July 4, 1917.
- Bigelow, Edward Alexander, II, 1903-05.** Of the Hopeville Mfg. Co., Worcester, Mass.
- Bigelow, Prescott Fenno, II, '12 (D).** Died Oct. 14, 1918.
- Billings, Howard, IV, 1913-16.** Chemist, U. S. Cartridge Co., Lowell, Mass.
- Bissell, William Elisha, Jr., I, 1897-99.**
- Bissonnette, Leo Adolph, IV, 1915-16.** 300 Varnum Ave., Lowell, Mass. See Service Record.
- Blaikie, Howard Mills, II, '11 (D).**
- Blake, Fraser Harold, IV, 1912-13.** 12 Dover St., Haverhill, Mass.
- Blake, Parker Gould, VI, '14 (D).** 9 Remington St., Cambridge, Mass. See Service Record.
- Blanchard, Walter Russell, IV, 1913-14.** 94 Pine St., Swampscott, Mass.
- Blood, Prentice Walker, II, 1910-11.** 366 Main St., Concord Junction, Mass. See Service Record.
- Bloom, Wilfred Nathaniel, IV, '03 (D).** Died Aug. 17, 1918.
- Bodwell, Henry Albert, II, '00 (D).** Superintendent, Smith & Dove Mfg. Co., Andover, Mass.
- Bonan, Leo Francis, III, 1905-06.** Died Oct. 28, 1918.
- Boyd, George Andrew, I, '05 (D).** Accountant, Harmony Mills, 77 Franklin St., Boston, Mass.
- Boyd, William, II, 1906-09.** 36 Beacon St., North Adams, Mass.
- Bradford, Roy Hosmer, II, '06 (D).** Assistant Superintendent, Smith & Dove Mfg. Co., Andover, Mass.
- Bradley, Raymond Frost, VI, '14 (D).** Garage Proprietor, Twin Light Garage Co., Gloucester, Mass.
- Bradley, Richard Henry, V, '01 (C).** Overseer, Wamsutta Mfg. Co., New Bedford, Mass.
- Brady, John Thomas, Jr., II, 1907-10.** 162 Western Ave., Albany, N. Y. See Service Record.

- Bragg, Harold Neil, IV, 1907-09, 1910-11.** 4318 St. Lawrence Ave., Chicago, Ill.
- Brainerd, Arthur Travena, IV, '09 (D).** Manager, Chicago Office, H. A. Metz & Co., Inc., 317 North Clark St., Chicago, Ill.
- Brainerd, Walter Erwin, IV, 1914-17.** 146 Main St., Bradford, Mass. See Service Record.
- Branigan, Edward Bailey, IV, 1902-03.** Dentist, Groton, Mass.
- Brannen, Leon Vincent, III, '07 (C).** 300 North 40th St., Philadelphia, Pa.
- Branson, Frank Lanier, I, 1911-12.** Superintendent, Fairfax Mill of West Point Mfg. Co., Fairfax, Ala.
- Brearley, Earl Belmont, IV, 1913-15, 1916-17.** Dayville (Killingly), Conn. See Service Record.
- Brickett, Chauncey Jackson, II, '00 (D).** Principal, School of Textiles, International Correspondence School, Scranton, Pa.
- Brickett, Raymond Calvin, II, '14 (D).** Overseer, M. T. Stevens & Sons Co., Marland Mills, Andover, Mass.
- Briggs, Howard Fox, II, 1905-06.**
- Brinckerhoff, Herbert Winship, IV, 1913-14.**
- Brookhouse, Albert Luscomb, IV, 1903-06.** 55 Ocean Ave., Salem, Mass.
- Brooks, Joseph Horace, I, 1902-05.** 342 Washington St., Haverhill, Mass.
- Brower, Abram Vedder, I, 1899-1900.** 306 Genesee St., Utica, N. Y. See Service Record.
- Brower, Egmont Giles, I, 1906-07.** 306 Genesee St., Utica, N. Y.
- Brown, Henry Wheeler, II, 1898-1900.** Woolen Manufacturer, Homestead Woolen Mills, West Swanzey, N. H.
- Brown, Rollins Goldthwaite, IV, '12 (D).** Superintendent, White Mills of New Hampshire, West Peterboro, N. H.
- Brown, Russell Lee, VI, 1915-17.** 94 Groveland St., Haverhill, Mass. See Service Record.
- Brownell, Perry Russell, III, 1904-07.** 45 Highland Ave., Fitchburg, Mass.
- Buchan, Donald Cameron, II, '01 (D).** Assistant Superintendent, M. T. Stevens & Sons Co., North Andover, Mass.
- Buck, William A., VI, 1903-04.** 80 Pine St., Stoneham, Mass.
- Buckland, Cora, IIb, 1897.** 480 Westford St., Lowell, Mass.
- Bullock, Edward Jarvis Cushing, II, 1900-02.** Genealogist, Warren, R. I.
- Bunce, Raymond Hamer, III, 1906-09.** Salesman, American Woolen Co., 225 4th Ave., New York City.
- Burchard, Villette, IIb, 1897-98.**
- Burke, Henry Barker, IV, 1909-1912.** South Acton, Mass. See Service Record.
- Burke, John William, IV, 1908-09.** Centre St., Amesbury, Mass.
- Burke, William Alvord, 1904-05.** 216 Nesmith St., Lowell, Mass.
- Burnette, Clarence Arthur, I, 1901-02.**
- Burnham, Frank Erwin, IV, '02 (D).** Manager, Dyestuff and Intermediate Department, Marden, Orth & Hastings Co., Newark, N. J.
- Burnham, George Webster, IIb, 1908-10.** 6 Norton St., Nashua, N. H.
- Burns, Edward Joseph, IV, 1904-05.** Ballistic Laboratory, U. S. Cartridge Co., Lowell, Mass.
- Burns, James Edward, IV, 1904-05.** Ballistic Engineer and Chemist, U. S. Cartridge Co., Lowell, Mass.
- Burns, William McGavin, IV, 1906-09.** Chemist, New England Fuel and Transportation Co., Everett, Mass.
- Burrage, Katherine, IIb, '99 (C).** Died May 16, 1914.
- Butterfield, Pearl Mae, IIb, 1900-01.** See Strong, Mrs. Alden G.
- Buttery, Henry Mansfield, II, 1903-05.**
- Byers, George Edward, III, 1914-15.** Foreign Agent and Representative, American Woolen Products Co., 225 4th Ave., New York City.

- Callahan, John Joseph, IV, 1906-08.
- Cameron, Elliott Francis, IV, '11 (D). Chief Field Adjuster, Bureau of War Risk Insurance, U. S. Treasury Department, Washington, D. C.
- Cameron, George Walker, I, 1902-03.
- Campbell, Laura Etta, IIIb, '00 (C). Deceased.
- Campbell, Louise Porter, IIIb, '03 (C). 10 Sheffield Rd., Winchester, Mass.
- Campbell, Orison Sargent, II, '03 (D). Superintendent, Canadian Consolidated Felt Co., Ltd., Kitchener, Ont.
- Campos, Guy Joaquin, III, 1903-08. 87 Powell St., Lowell, Mass.
- Canty, Timothy Andrew, III, 1907-09. 39 Mineral St., Reading, Mass. See Service Record.
- Carlson, Ernest Berger, VI, 1912-14. Assistant Superintendent, Columbian Rope Co., Auburn, N. Y.
- Carney, George Sydney, 1897.
- Carr, Charles Read, II, 1901-03. Died Jan. 10, 1918.
- Carr, George Everett, I, '05 (D). Efficiency Engineer, National Carbon Co., Factory B, Clarksburg, W. Va.
- Carter, Edward Ernest, I, 1897-98.
- Carter, Robert Albion, IV, '02 (D). Assistant Sales Manager, Philadelphia Office, E. I. DuPont de Nemours & Co., 504 Land Title Bldg., Philadelphia, Pa.
- Carter, Warren E., II, 1901-02. 43 Pleasant St., Clinton, Mass.
- Cary, Julian Clinton, VI, '10 (D). Branch Manager, American Mutual Liability Insurance Co., 209 Pearl St., Hartford, Conn.
- Casey, Henry Francis, I, 1909-12. Mining Engineer, Société Internationale Forestière et Minière du Congo, Tshikapa, Congo Belge, West Africa.
- Casey, William Francis, I, 1911-14. 11A Bayard St., Allston, Mass.
- Caswell, Glen Bowden, VI, 1909-11. Inspector, Ordnance Department, U. S. Army, Boston, Mass.
- Chamberlin, Frederick Ellery, I, '03 (D). Overseer, Monument Mills, Housatonic, Mass.
- Chandler, Proctor Ralph, IV, '11 (D). With Index Knitting Co., Waltham, Mass.
- Charron, Edmond Joseph, IV, 1916-17. Died in France Oct. 9, 1918.
- Chase, Ernest Dudley, IIIb, 1897-99. Publisher, 251 Causeway St., Boston, Mass.
- Cheney, Harold Ware, III, 1903-06. 277 Greeley St., Clinton, Mass.
- Cheney, Henry Stanley, I, 1908-10. 277 Greeley St., Clinton, Mass.
- Chisholm, Lester Bury, I, '11 (D). General Superintendent, Everlastik, Inc., 52 Chauncey St., Boston, Mass.
- Christie, Grover William, IV, 1911-12. 20 Chestnut St., Bradford, Mass.
- Church, Charles Royal, II, '06 (C).
- Church, Charles Warren, III, 1912-14. East Main St., Housatonic, Mass.
- Church, Harold Paty, III, 1910-13. 34 George St., Providence, R. I. See Service Record.
- Churchill, Charles Whittier, III, '06 (D). Manufacturer, Lowell, Mass.
- Churchill, Edwin, Jr., VI, 1904-05. Office Manager, Worcester Machine Works, Room 1109, Park Bldg., Worcester, Mass.
- Clapp, Frank Austin, II, '04 (D). Salesman, Dunmore Worsted Co., Inc., 215 4th Ave., New York City.
- Clapp, Joseph Albert, III, 1906-07.
- Clark, Earl William, IV, '18 (B.T.C.). Salem Depot, N. H.
- Clark, Leo Roswell, III, 1913-14. 5 Central St., Rochester, N. H.
- Clark, Ralph Bradford, II, 1909-11. Assistant Superintendent, Endicott, Johnson & Co., Endicott, N. Y.
- Clark, Thomas Talbot, II, '10 (D). Assistant Manager and Treasurer, Talbot Mills, North Billerica, Mass.

- Cleary, Charles Joseph, II, '13 (D).** 1493 Tremont St., Boston, Mass. See Service Record.
- Clements, Robert, III, 1902-04.** 22 Davis St., North Andover, Mass.
- Clogston, Raymond B., IV, '04 (D).** Superintendent of Dyeing, Merrimack Mfg. Co., Lowell, Mass.
- Coan, Charles Bisbee, IV, '12 (D).** Chemist, Royal Hasco Co., Weehawken, N. J.
- Coburn, Clarence Elliott, III, 1906-09.** Died Oct. 15, 1918.
- Cochran, John Poyntz, I, 1901-02.** Manager, Benjamin Moore & Co., Cleveland, Ohio.
- Cogswell, Wilder Drury, II, 1909-12.** 98 Main St., Bradford, Mass. See Service Record.
- Colby, James Tracy, VI, '16 (D).** With F. C. Huyck & Sons, Albany, N. Y.
- Colby, Lawrence Wendell, IV, 1911-13, 1914-15.** 37 High St., Andover, Mass.
- Cole, Edward Earle, IV, '06 (D).** Financial Reporter, The Bradstreet Co., John Hancock Bldg., Boston, Mass.
- Cole, Elmer Ellsworth, I, 1915-17.** Inspector, Ordnance Department, Mt. Hope Finishing Co., North Dighton, Mass.
- Cole, James Thomas, II, '05 (D).** Superintendent, Cambridge Industries for Blind, Massachusetts Commission for the Blind, Cambridge, Mass.
- Cole, William B., I, 1897-98.** Rockingham, N. C.
- Coleman, Wesley Davis, IV, 1912-15.** Correspondent, Westinghouse Electric and Manufacturing Co., 10 High St., Boston, Mass.
- Collingwood, Hueston, III, 1906-09.** 12 Vernon St., Plymouth, Mass. See Service Record.
- Coman, James Groesbeck, I, '07 (D).** General Manager, Tipton Cotton Mills, Covington, Tenn.
- Comey, Francis Wilson, I, 1911-12.** 185 Upham St., Melrose, Mass. See Service Record.
- Comey, Henry Cheever, VI, 1910-11.** Superintendent of Stores, Warner Gear Co., Muncie, Ind.
- Comins, Albert Knowlton, IV, 1903-04.** 39 West Chestnut St., Wakefield, Mass.
- Conant, Harold Wright, I, '09 (D).** Manager, Conant, Houghton & Co., Inc., Littleton, Mass.
- Conant, Richard Goldsmith, I, '12 (D).** Littleton, Mass. See Service Record.
- Cone, Morris Huntington, III, 1916-17.** 27 Coolidge Hill Rd., Cambridge, Mass. See Service Record.
- Conklin, Jennie Grace, IIIb, '05 (C).** 93 Binney St., Roxbury, Mass.
- Conway, Coleman Berkley, I, 1915-17.** Danville, Va. See Service Record.
- Cook, Cheney Edwin, II, 1903-05.** Director, Eastern Leather Co., Winslow Bros. & Smith Co., Winslow & Co., 248 Summer St., Boston, Mass.
- Cook, Frank James, II, 1903-04.**
- Cook, Kenneth Bartlett, I, '13 (D).** Superintendent, Textile Section, U. S. Rubber Co., Newark, N. J.
- Cooke, Harrison Aldrich, I, 1909-11.** 462 South Willard St., Burlington, Vt.
- Cosendai, Edwin Frederick Ernest, IV, '15 (B.T.D.).** Superintendent, Nitro Products Co., Saginaw, Mich.
- Cox, James William, Jr., II, 1914-15.** 3 Elk St., Albany, N. Y. See Service Record.
- Craig, Albert Wood, IV, '07 (D).** With the Pacific Mills, Lawrence, Mass.
- Craig, Clarence Eugene, III, '02 (D).** Farmer, Derry, N. H.
- Crane, Edwin Maxon, I, 1909-12.** 60 Mendon St., Blackstone, Mass.

- Cranska, Lucius Briggs, I, 1898-00.** General Manager, Cranska Thread Co., 49 Hermon St., Worcester, Mass.
- Crawford, John William, IV, 1910-14.** 18 South Broadway, Lawrence, Mass.
- Crawford, Robert Rowan, Jr., I, 1902-03.** Winston, N. C.
- Creese, Guy Talbot, IV, '14 (D).** Chemist, Creese & Cook Co., Danvers, Mass.
- Crippen, Harold Everett, I, 1915-17.** 223 Columbia St., Adams, Mass. See Service Record.
- Cubberly, Norman Purdy, VI, 1913-16.** Assistant Supervisor of Time Study, Cheney Bros., South Manchester, Conn.
- Cudlip, Carroll Monmonier, I, 1912-13.** 35 Carleton St., St. John, N. B. See Service Record.
- Culver, John Holland, IV, 1908-11.** Ayer, Mass.
- Culver, Ralph Farnsworth, IV, '04 (D).** President, Culver Dye Co., and with Drake & Co., Turks Head Bldg., Providence, R. I.
- Cummings, Edward Stanton, VI, '16 (D).** 29 Huntington St., Lowell, Mass. See Service Record.
- Curran, Charles Ernest, III, '02 (C).** Head Designer, American Woolen Co., Wood Mills, Lawrence, Mass.
- Currier, Herbert Augustus, I, '06 (D).** Manager, New York Cotton Yarn Department, William Whitman Co., Inc., New York City.
- Currier, John Alva, II, '01 (D).** Superintendent, Pentucket Mills, Haverhill, Mass.
- Curtis, Frank Mitchell, I, '06 (D).** Lumber Merchant, Wm. Curtis Sons Co., Roxbury, Mass.
- Curtis, William Leavitt, II, '05 (C).**
- Cushing, Angeline, IIIb, 1897.** 48 Wannalancit St., Lowell, Mass.
- Cutler, Benjamin Winthrop, Jr., III, '04 (D).**
- Cutler, Clarence Lewis, IV, 1901-03.**
- Cuttle, Francis George, IV, 1897-98.**
- Cuttle, James H., II, '99 (D).**
- Cuttle, Percy, IIIb, 1898-00.**
- Dabney, William Lyle, I, 1898-99.**
- Dadmun, Walter Robbins, I, 1897-98.** Assistant Treasurer, Worcester Mechanics Savings Bank, Worcester, Mass.
- Dalton, Grace G., IIIb, 1897-99.** Embroidery Designer, 5 Bottis Court, Salem, Mass.
- Dalton, Gregory Smith, IV, '12 (D).** Assistant Superintendent, Mansfield Tire and Rubber Co., Mansfield, Ohio.
- Dalton, John, Jr., IV, 1909-12.** 75 Veazie St., North Adams, Mass. See Service Record.
- Danforth, Walter Kendall, I, 1902-04.** 33 School St., Woburn, Mass.
- Daniels, Walter Wheaton, II, 1903-04.** Pawtucket, R. I.
- Darrin, Erwin Nellis, VI, 1914-15.** 29 East 1st St., Corning, N. Y. See Service Record.
- Davieau, Alfred Edward, VI, '16 (D).** Assistant Material Engineer, Bureau of Construction and Repairs, Navy Department, Washington, D. C.
- Davieau, Arthur Napoleon, VI, '13 (D).** With F. C. Huyck & Sons, Albany, N. Y.
- Davis, Abby Frances, IIIb, 1897.**
- Davis, Alexander Duncan, VI, '14 (B.T.E.).** Supervising Draftsman, Springfield Armory, Springfield, Mass.
- Davis, Harold Everett, II, 1915-17.** Inspector of Textiles, Quartermaster's Department, Philadelphia, Pa.
- Davis, John Pickman, IV, 1903-04.** Farmer, Chelsea, Vt.
- Davis, Nathaniel Lee, II, 1909-10.** 9 10th Ave., Haverhill, Mass.

- Daw, Arthur John, IV, 1909-12.** Superintendent of Dry Color, Sherwin-Williams Co., Newark, N. J.
- Dawson, George Irving, VI, 1911-14.** Industrial Engineer, Scovell, Wellington & Co., 110 State St., Boston, Mass.
- Deady, William Francis, IV, 1913-16.** Chemical Engineer, Glenlyon Dye Works, Phillipsdale, R. I.
- Dearborn, Roy, VI, '13 (D).** Purchasing Agent, Brightwood Mfg. Co., North Andover, Mass.
- Dearing, Melville Clifford, IV, 1904-06.**
- Dearth, Elmer Ellridge, IV, '12 (D).** Assistant Treasurer, New Jersey Car-spring and Rubber Co., Jersey City, N. J.
- Deely, John Alfred, III, 1907-10.** 33 Wellington Ave., Pittsfield, Mass.
- Delano, James, III, 1905-06.** New Bedford, Mass.
- Demuth, Herbert Emil, IV, 1909-12.** Overseer of Dyeing, Worumbo Mfg. Co., Lisbon Falls, Me.
- Dennett, Mahlon Webb, IV, 1914-17.** Died Aug. 10, 1918, in France from effects of wounds received in action.
- de Sa, Francisco, VI, '18 (B.T.E.).** Avenue da Graça, Bahia, Brazil.
- Desmarais, Albert Ernest, VI, 1917-18.** Main St., North Grafton, Mass. See Service Record.
- Dewey, James French, II, '04 (D).** Superintendent, Woolen Mill, A. G. Dewey Co., Quechee, Vt.
- Dewey, Maurice William, II, '11 (D).** Inspector of Loans, National Life Insurance Co., Montpelier, Vt.
- Dews, Frederic Gifford, 1897.** 141 Chestnut St., New Bedford, Mass.
- Dexter, George Owen, Jr., VI, 1916-17.** 54 High St., Newburyport, Mass. See Service Record.
- Dickson, Earle Ensign, I, 1913-14.** Purchasing Agent, Johnson & Johnson, New Brunswick, N. J.
- Dillon, James Henry, III, '05 (D).** Landscape and Architectural Designer, Park and Recreation Department. Boston, Mass.
- Dimock, Dwight Leverett, IV, 1911-12, 1914-17.** Billerica, Mass. See Service Record.
- Donald, Albert Edward, II, '04 (D).** Agent, Hecla Mill, American Woolen Co., Uxbridge, Mass.
- Donnellan, Frank T., III, 1902-05.** Salesman, Butler Bros., Chicago, Ill.
- Donovan, Michael Rickard, Jr., III, 1907-10.** 128 South Common St., Lynn, Mass.
- Dorr, Clinton Lamont, VI, '14 (D).** With Stark Mills, Manchester, N. H.
- Douglas, Walter Shelton, VI, 1915-17.** 12 Bertram St., Lowell, Mass. See Service Record.
- Dover, Henry Harold, II, 1913-15.** 11 Vine St., Winchester, Mass.
- Dover, James Alfred, VI, 1910-12.** 11 Vine St., Winchester, Mass.
- Dowling, J. Alvin, II, 1898-00.** Malden, Mass.
- Duncan, Robert Carlyle, IV, 1902-05.** 39 Warren Ave., Woburn, Mass.
- Dunning, Hazard Ackman, II, 1909-11.** Co-manager of department, Harding, Tilton & Co., 320 Broadway, New York City.
- Duval, Joseph Edward, II, '10 (D).** Philadelphia Representative, Punch & Predmore, Inc., 308 Chestnut St., Philadelphia, Pa.
- Dwight, John Francis, Jr., II, '08 (D).** Market Gardener, Holliston, Mass.
- Eames, Alden Noyes, IV, 1904-07.** Wilmington, Mass.
- Eaton, Bruce, I, 1904-05.** Assistant Cotton Goods Buyer, Cross Dry Goods, Lawrence, Mass.
- Eaton, Ralph Carter, VI, 1915-16.** Bedford St., Lexington, Mass. See Service Record.

- Echmalian, John Gregory, VI, '16 (B.T.E.). Draftsman, The Vlehek Tool Co., Cleveland, Ohio.
- Edgecomb, Fred Harrison, I, 1911-12. 11 Creedway, Taunton, Mass. See Service Record.
- Edmands, Frederick Plaisted, III, 1908-11.
- Edwards, Arthur Watson Robbins, I, 1901-02. Photo Engraving, Department Head, Folsom Engraving Co., Boston, Mass.
- Edwards, Charles Berkeley, II, 1903-05. Park St., Haverhill, Mass.
- Ehrenfried, Jacob Benjamin, II, '07 (C). Merchant, Geo. Ehrenfried Co., Lewiston, Me.
- Eidam, Louis Max, II, 1906-07. 280 Common St., Lawrence, Mass.
- Elliot, Gordon Baylies, II, '12 (D). Grafton, Mass. See Service Record.
- Ellis, Dwight Warren, II, 1905-07. Monson, Mass.
- Ellis, George William, IV, 1905-06. Superintendent, A. D. Ellis & Sons, Monson, Mass.
- Emerson, Edward Warren, 1897. Died Nov. 26, 1901.
- Emerson, Frank Warren, II, '03 (D). Agent, Moosup Mills, Moosup, Conn.
- Engstrom, Karl Emil, VI, '12 (D).
- Enloe, Winfred Paige, I, 1917-18. Roanoke, Ala. See Service Record.
- Estey, Paul Franklin, IV, 1908-11. Chemist, Bradford Dyeing Association, Bradford, R. I.
- Evans, Albert Hayes, VI, 1914-16. Automobile Mechanic, Boston Auto Supply Co., 71 1st St., Lowell, Mass.
- Evans, Alfred Whitney, III, '03 (D).
- Evans, William Robinson, III, '03 (D). Foreman, Durgin Shoe Co., Haverhill, Mass.
- Eveleth, Paul Henry, II, 1906-08.
- Ewer, Nathaniel Trull, IV, '01 (D). Chemist, American Dyewood Co., Chester, Pa.
- Eyers, John Thomas, IV, 1900-01.
- Fairbanks, Almonte Harrison, II, '09 (D). Treasurer and General Manager, Middlesex Knitting Co., Wakefield, Mass.
- Fairbanks, William Spring, III, 1906-08. Registered Pharmacist, A. W. Fairbanks, Fitchburg, Mass.
- Faison, Duncan Moore, I, 1901-02.
- Faison, Harold Collin, I, 1901-02. Winton, N. C.
- Farmer, Chester Jefferson, IV, '07 (D). Associate Professor of Chemistry, Northwestern University Medical School, Chicago, Ill.
- Farnsworth, Harold Vincent, VI, '16 (B.T.E.). 8 Wedgemere Ave., Winchester, Mass. See Service Record.
- Farr, Leonard Schaefer, II, '08 (D). Assistant Superintendent, No. 2 Mill, Farr Alpaca Co., Holyoke, Mass.
- Faulkner, Richard Manning, II, 1909-11. With Faulkner & Colony Mfg. Co., Keene, N. H.
- Fechner, Paul Emil, I, 1901-02. Manchester, N. H.
- Feeney, John Frederick, VI, 1912-13. 117 Maple St., Hudson, Mass.
- Feindel, Catherine Estella, IIb, 1910-13.
- Fels, August Benedict, II, '99 (D). With Wm. Fels, Inc., 148 West 23d St., New York City.
- Fendel, Frank, IV, 1914-17. 92 Castle St., Boston, Mass. See Service Record.
- Ferguson, Arthur Feiling, I, '03 (D).
- Ferguson, Mrs. Arthur Feiling, IIb, 1908-10.
- Ferguson, William Gladstone, III, '09 (D). In charge of Efficiency Department, Ludlow Manufacturing Associates, Ludlow, Mass.
- Ferrin, George Kidder, III, 1908-10. Died in August, 1910.
- Field, Osmond Francis, VI, 1905-07.

- Finch, Cecil Clement, II, 1914-15.** Superintendent, Broadalbin Knitting Co., Ltd., Broadalbin, N. Y.
- Finlay, Harry Francis, IV, '10 (D).** Chemist, American Dyewood Co., New York City.
- Finnell, Norman Croft, VI, 1914-15.** 55 Ellery St., Cambridge, Mass.
- Finneran, William Cletus, VI, 1910-11.** 8 Boylston St., Jamaica Plain, Mass.
- Fisher, Russell Todd, VI, '14 (D).** 199 Washington St., Gloucester, Mass.
See Service Record.
- Fiske, Starr Hollinger, II, '09 (D).** Assistant Superintendent, Cloth Division, D. Goff & Sons, Pawtucket, R. I.
- Fiske, Sydney Gay, I, 1897-98.** Hingham, Mass.
- Fitts, Jonathan Allen, III, 1897-98.** Millwright, American Woolen Co., Rochdale, Mass.
- Fitzgerald, John Francis, IV, '18 (B.T.C.).** 13 Wade Ave., Woburn, Mass.
See Service Record.
- Fitzpatrick, William Joseph, VI, 1906-09.** 73 Gardner Rd., Brookline, Mass.
See Service Record.
- Fleming, Frank Everett, IV, '06 (D).** Assistant Dyer and Finisher, Goodall Worsted Co., Sanford, Me.
- Fletcher, Howard Seymour, III, 1911-12.** Sunapee St., Newport, N. H.
- Fletcher, Roland Hartwell, VI, '10 (D).** Littleton Common, Mass. See Service Record.
- Flynn, Thomas Patrick, IV, '11 (D).** 21 Derby St., Fitchburg, Mass. See Service Record.
- Folkins, Ralph Morris, II, 1913-16.** 185 Chestnut St., Cambridge, Mass. See Service Record.
- Folsom, Harold Gilman, IV, 1911-14.** Chemist, General Electric Co., West Lynn, Mass.
- Ford, Austin Lewis, II, 1912-15.**
- Ford, Edgar Robinson, IV, '11 (D).** Finisher, Sayles Finishing Plants, Saylesville, R. I.
- Forsaith, Ralph Allan, VI, '16 (B.T.E.).** 56 Lock St., Nashua, N. H. See Service Record.
- Fortin, Adelard Joseph, VI, 1915-17.** 43 Plymouth St., Lowell, Mass. See Service Record.
- Foss, Alfred A., III, 1901-02.** 63 University Rd., Brookline, Mass.
- Foster, Boutwell Hyde, VI, '17 (B.T.E.).** Textile Engineer, U. S. Rubber Co., Newark, N. J.
- Foster, Clifford Eastman, II, '01 (D).** Superintendent, Superior Thread and Yarn Co., Philadelphia, Pa.
- Foster, Lloyd Garrison, III, 1905-06.** 416 Newbury St., Boston, Mass.
- Fowler, Alma Evelyn, IIIB, 1904-06.**
- Fowler, F. Bailey, I, 1898-1900.**
- Frary, Stanley Hall, I, 1915-18.** 12 West Concord St., Dover, N. H. See Service Record.
- French, Walter Byron, VI, 1915-17.** Assistant Master Mechanic, Boot Mills, Lowell, Mass.
- Frost, Harold Benjamin, II, '12 (D).** Depot Quartermaster's Corps, Cambridge, Mass.
- Frost, John Rufus, Jr., I, 1904-05.** Sales Manager, American Steel and Wire Co., 30 Church St., New York City.
- Frothingham, William Alfred, IV, 1912-14.** Superintendent, Globe Laundry, 26 Temple St., Portland, Me.
- Frye, Whitney Morse, VI, 1912-13.** Manufacturer, E. B. Frye & Son, Wilton, N. H.
- Fujiyoshi, Heisayu, I, 1911-12.** Died April 19, 1915.

- Fuller, Allen Reed, IV, '17 (B.T.C.).** Chemist, E. I. duPont de Nemours & Co., Lodi Dye Works, Lodi, N. J.
- Fuller, George, I, '03 (D).** Associate Editor and Fabric Expert, F. P. Bennett & Co., 2 Rector St., New York City.
- Fullerton, MacArthur Madeira, IV, 1905-06.**
- Gadsby, Arthur Norton, II, '13 (D).** Assistant Physicist, Bureau of Standards, Washington, D. C.
- Gage, Winthrop Hodges, I, 1911-12.** 38 Dartmouth St., Somerville, Mass.
- Gahm, George Leonard, II, '06 (D).** Superintendent, Wood Worsted Mill, Lawrence, Mass.
- Gainey, Francis William, IV, '11 (D).** Chemist, Pacific Mills, Lawrence, Mass.
- Gale, Harry Laburton, III, '10 (D).** Manager, Fancy Goods Department, Wilmerding & Bissett, 170 5th Ave., New York City.
- Gant, Joseph Erwin, I, 1900-01.** Of Holt, Gant & Holt Cotton Mfg. Co., Altamahaw, N. C.
- Gardner, Arthur Whitcomb, IIIb, 1898-99.**
- Garmon, Joseph Parker, VI, 1913-16.** 76 19th St., Lowell, Mass. See Service Record.
- Garvey, Mrs. William J., IIIb, 1903-05.** 517 High St., Lowell, Mass.
- Gay, Olin Dow, II, '08 (D).** Superintendent, Gay Bros. Co., Cavendish, Vt.
- Geaney, James Howard, III, 1901-03.** Overseer, Brightwood Mfg. Co., North Andover, Mass.
- Geb, Harry Jacob, II, 1903-04.** 42 Emmons St., Franklin, Mass.
- Gentleman, Lawrence Miles, VI, 1916-17.** Student, Massachusetts Institute of Technology, Cambridge, Mass.
- Gerrish, Henry Kilborn, III, '16 (D).** 24 Commonwealth Ave., Lowell, Mass. See Service Record.
- Gerrish, Walter, III, '03 (D).** With the American Felt Co., Hyde Park, Mass.
- Gibbs, Charlotte Mitchell, IIIb, 1904-05.** See Baker, Mrs. Cecil F.
- Gilley, Frederic Stacey, VI, 1913-14.** With American Woolen Co., Box 381, Boston, Mass.
- Gilliam, George, III, 1917-18.** Superintendent, Sterling Cotton Mills, Franklin, N. C.
- Gillon, Sara Agnes, IIIb, '06 (C).** 26 Hank St., Lowell, Mass.
- Gilman, George Walter, II, 1897-98.**
- Gilmore, Hazel Sophia, IIIb, 1913-16.** With Boston Mfg. Co., Waltham, Mass.
- Ginsburg, Albert, IV, 1912-13.** 95 Ruthven St., Roxbury, Mass.
- Girard, Harry Nelson, III, 1906-07.** See Service Record.
- Goldberg, George, VI, '10 (D).** Draftsman, Watertown Arsenal, Watertown, Mass.
- Goldman, Edward, VI, 1909-10.** 260 Cross St., Malden, Mass.
- Gonnam, John Cluff, II, 1907-08.**
- Gonzalez, Emilio Jalandoin, I, 1908-09.**
- Gooch, Albert Norwood, II, 1900-01.** Salesman, Hub Cut Sole Co., 12 Farnsworth St., Boston, Mass.
- Gooch, Alfred Lyman, II, 1900-01.** Traveling Salesman, Stimpson & Co., 65 Chatham St., Boston, Mass.
- Goodacre, Kenneth Roy, VI, 1915-17.** 34 Park Ave., Wakefield, Mass. See Service Record.
- Goodale, William Peirce, I, 1909-12.** Salesman, C. T. Tagliabue Co., Brooklyn, N. Y.
- Goodell, Josiah Butler, II, 1912-15.** 271 Foster St., Lowell, Mass.
- Goodhue, Amy Helen, IIIb, '00 (C).** See Harrison, Mrs. Arthur.
- Goodwin, James Southwick, III, 1908-10.** 4 Osgood Pl., Amesbury, Mass. See Service Record.

- Gottesman, Louis, IV, 1914-16, 1917-18. 977 Columbus Ave., Roxbury, Mass.
See Service Record.
- Grant, Harold, II, 1904-06. 1 Tuckerman St., Worcester, Mass.
- Gray, Robert Calvin, III, 1906-09. Designer, Washington Mills, Lawrence, Mass.
- Greene, Louis Abe, I, 1912-13.
- Greenblatt, Joseph, VI, 1917-18. Student, Massachusetts Institute of Technology, Cambridge, Mass.
- Greer, John Henderson, Jr., IV, 1911-14. Colorist and Chemist, Monroe Color and Chemical Co., Quincy, Ill.
- Grindle, Frank Alonzo, IIIb, 1899-1900. 45 Marginal St., Lowell, Mass.
- Grout, Walter Thorndike, II, 1915-16. 77 Main St., Andover, Mass. See Service Record.
- Gunning, Alfred Joseph, II, 1914-16. 169 Moore Ave., Franklin, Mass.
- Gurney, Wallace LaSalle, IV, 1916-17. 20 Buckminster St., Brighton, Mass.
See Service Record.
- Gyzander, Arne Kolthoff, IV, '09 (D). 48 Orient St., Malden, Mass.
- Hadley, Richard Francis, IV, 1915-17. Billerica, Mass. See Service Record.
- Hadley, Roger Conant, IV, 1915-17. Billerica, Mass. See Service Record.
- Hadley, Walter Eastman, IV, '08 (D). Chemist, The Clark Thread Co., Newark, N. J.
- Hale, Elliott Kidder, II, 1907-10. 80 Salem St., Lawrence, Mass. See Service Record.
- Hall, Roswell Gleason, III, 1907-08. 101 Ridge Rd., Dorchester, Mass.
- Halsell, Elam Ryan, I, '04 (C).
- Halstead, Frank Kenneth, II, 1910-11. 45 Howard St., Norwood, Mass.
- Hamilton, Robert Milton, III, 1911-12. 14 Summit St., South Manchester, Conn. See Service Record.
- Hammond, James Weston, II, 1910-11. Associate in Animal Husbandry, Ohio Agricultural Experiment Station, Wooster, Ohio.
- Hanley, Arthur Mathew, III, 1900-03. 31 Jackson St., Worcester, Mass.
- Hanley, Charles Francis, III, 1897-1900.
- Hanlon, David A., III, 1906-07. 503 Mammoth Rd., Dracut, Mass. See Service Record.
- Hanscom, Lester Harold, II, 1904-05. 7 Dorham St., Lawrence, Mass.
- Harding, Harry Osborne, VI, 1910-11. Yarmouth, N. S. See Service Record.
- Harding, Richard Bruce, IV, 1910-11. 130 Longwood Ave., Brookline, Mass.
See Service Record.
- Hardy, Mary Madge, IIIb, 1897.
- Hardy, Philip Lewis, VI, '10 (D). Contractor, Andover, Mass.
- Hargroves, Willis Webster, I, 1899-1900. General Manager, Planters' Mfg. Co., Portsmouth, Va.
- Harlow, Ivan Othma, IV, 1915-17. Chemist, Arnold Print Works, North Adams, Mass.
- Harmon, Charles Francis, I, '99 (D). 86 Kingsland Ave., Elmhurst, L. I.
- Harmon, Daniel Harold, II, 1916-17. 5 Clinton St., Palmyra, N. Y.
- Harmon, Lilla Maria, IIIb, 1899-1900. 173 Thompson St., Springfield, Mass.
- Harriman, James Phillips, III, 1900-03.
- Harrington, Thomas, IV, '15 (D). Chemist and Foreman, R. M. S. Leather Co., Salem, Mass.
- Harris, Charles Edward, I, '05 (D). Owner and Manager, Harris Wheel Co., Easthampton, Mass.
- Harris, George Simmons, I, '02 (C). Superintendent, Lanett Cotton Mills, and Agent, Lanett Bleachery and Dye Works, Lanett, Ala.
- Harris, Lawrence Rankin, III, 1913-16. 83 Greenwood St., Greenwood, Mass.
See Service Record.

- Harrison, Mrs. Arthur (Goodhue, Amy Helen), IIIb, '00 (C).** Dracut, Mass.
- Harrison, Henry Haines, I, 1908-10.** Construction Superintendent, National Engineering Corporation, 40 Central St., Boston, Mass.
- Hart, Arthur Norman, IV, 1914-17.** 43 Swan Ave., Lowell, Mass. See Service Record.
- Hartford, Nathan B. E., Jr., II, 1909-11.** 12 Parker St., Watertown, Mass.
- Hartshorn, George Tyler, II, 1909-12.** 99 Day St., Norwood, Mass. See Service Record.
- Hartshorn, Linus, I, 1897-98.** Died Feb. 18, 1917.
- Harvey, Wendell Phillips, IV, 1912-15.** 46 Fairmount St., Lowell, Mass. See Service Record.
- Haskell, Spencer Howard, II, '07 (D).** 56 Grove St., Worcester, Mass. See Service Record.
- Haskell, Walter Frank, IV, '02 (D).** Overseer, Dana Warp Mills, Westbrook, Me.
- Hassett, Paul Joseph, IV, '12 (D).** 22 Vernon St., Fitchburg, Mass. See Service Record.
- Hastings, Walter Maxwell, 1897-98.** Agent, Monomac Spinning Co., Lawrence, Mass.
- Hastings, Warren Robert, I, 1909-11.** 11 Upham Ter., Malden, Mass. See Service Record.
- Hatchard, George Philip, VI, 1911-12.** A and Main Sts., Allerton, Hull, Mass.
- Hathaway, Henry Bushby, III, 1909-12.** Statistical Department, J. & P. Coats, Inc., Pawtucket, R. I.
- Hathorn, George Wilmer, IV, '07 (D).** Chemist, Lawrence Gas Co., Lawrence, Mass.
- Hay, Ernest Crawford, II, '11 (D).** Superintendent, Monomac Spinning Co., Lawrence, Mass.
- Hayes, Ralph Hoitt, IV, 1904-06.** 281 Washington St., Dover, N. H.
- Hayward, William L., II, 1903-04.** President and Company Manager, Hayward Woolen Co., East Douglas, Mass.
- Heath, Willis Samuel, III, 1909-10.** Army Inspector of Ordnance, International Braid Co., Providence, R. I.
- Hebden, Harry, I, 1901-02.** Textile Expert, B. F. Goodrich Rubber Co., Akron, Ohio.
- Heiser, Jerome Marble, II, 1914-15.** 87 Bartlett St., Lowell, Mass. See Service Record.
- Hendrickson, Walter Alexander, II, '11 (D).** With Wiley, Bickford, Sweet Co., 60 King St., Worcester, Mass.
- Heney, Fred Charles, VI, 1913-15.** 56 Harvard St., Laconia, N. H. See Service Record.
- Hennigan, Arthur Joseph, II, '06 (D).** New England Representative, Cox & Schreiber, 31 Bedford St., Boston, Mass.
- Henry, Rodman Cleveland, II, 1916-18.** 34 Bartlett Ave., Pittsfield, Mass. See Service Record.
- Henry, William Leslie, III, 1907-08.** Hanover, Conn.
- Herbsman, Abraham Martin, IV, 1911-12.**
- Hickey, John Rodden, IV, 1916-17.** North Hartland, Vt. See Service Record.
- Hildreth, Clarence Edwin, VI, 1903-04.** Westford, Mass.
- Hildreth, Harold William, II, '07 (D).** Westford, Mass. See Service Record.
- Hinchliff, Ralph, I, 1910-11.** Secretary and Treasurer, Burson Mfg. Co., Rockford, Ill.
- Hines, Nellie P. IIIb, 1897-98.**
- Hintze, Thomas Forsyth, I, '06 (C).**
- Hitchcock, Thomas Barnes, 1898-1900.** Exporter and Importer, Trans-ocean Mercantile Co., Inc., 10 State St., Boston, Mass.

- Hockmeyer, Clive Edward, IV, 1914-15.** 15 Astor St., Lowell, Mass. See Service Record.
- Hodecker, John Nicholas, IV, 1908-11.** Chemist, F. C. Huyck & Sons, Albany, N. Y.
- Hodgkins, Albert Augustus, III, 1908-10.** Superintendent, Narrow Fabric, International Textile Inc., Bridgeport, Conn.
- Holden, Francis Crawford, IV, '09 (D).** Chemist and Dyer, Chelsea Fiber Mills, 1155 Manhattan Ave., Brooklyn, N. Y.
- Holden, Gladys Marie, IV, 1914-16.** With A. D. Little, Inc., Boston, Mass.
- Holden, Harold Henry, IV, 1914-17.** 26 Pacific St., Fitchburg, Mass.
- Holden, John Sanford, VI, 1915-17.** 752 North Main St., Attleboro, Mass. See Service Record.
- Holgate, Benjamin, III, '02 (C).** Head of Planning and Schedule Department, Boott Mills, Lowell, Mass.
- Hollings, James Louis, I, '05 (D).** With W. R. Grace & Co., 7 Hanover Sq., New York City.
- Holmes, Otis Milton, VI, '13 (B.T.E.).** Draftsman, United Shoe Machinery Corp., Beverly, Mass.
- Holt, Justin Gordon, VI, 1912-15.** 56 Vinal Ave., Somerville, Mass. See Service Record.
- Honiker, Joseph John, III, 1899-1900.** 129 River St., Bennington, Vt.
- Hood, George Currier, IV, 1915-17.** 100 Parkview Ave., Lowell, Mass.
- Hood, Leslie Newton, IV, '12 (D).** Chemist, D. Goff & Sons, Pawtucket, R. I.
- Hook, Russell Weeks, IV, '05 (D).** Chemist, Arthur D. Little, Inc., 30 Charles River Rd., Cambridge, Mass.
- Hooker, Stanley Ayer, 1897-98.** President and Manager, The Reliance Textile and Dye Works Co., 215 Madison Ave., Covington, Ky.
- Horsfall, George Gordon, II, '04 (C).** Assistant Dyer, Interwoven Mills, Inc., Martinsburg, W. Va.
- Horton, Chester Temple, VI, '14 (B.T.E.).** Wilmington, Mass. See Service Record.
- Hosley, Carlton Raymond, IV, 1915-17.** 7 Friend St., Salem, Mass. See Service Record.
- Hosmer, Joseph Bass, IV, 1910-11.** 310 Myrtle St., Manchester, N. H.
- Houghton, Roland Goldsmith, IV, 1912-13.** Farming, Littleton Common, Mass.
- Howard, Frederick Scott, Jr., VI, 1909-11.** Inspector of Leather, Charles K. Fox, Inc., Haverhill, Mass.
- Howard, George Edwin, VI, 1916-17.** Chestnut Rd., Needham, Mass.
- Howarth, Charles Lincoln, IV, '17 (B.T.C.).** Chemist, Zone Supply Officer, U. S. Army, Boston, Mass.
- Howe, Woodbury Kendall, I, '10 (D).** Assistant Superintendent, Merrimack Mfg. Co., Lowell, Mass.
- Hoyt, Charles William Henry, IV, '07 (D).**
- Hubbard, Ralph King, IV, '11 (D).** Superintendent, L. W. Packard & Co., Ashland, N. H.
- Huber, Fred Gilman, IV, 1915-17.** East Northfield, Mass. See Service Record.
- Huegin, Kurt Albert, IV, 1908-10.** 142 Highland Ave., Winchester, Mass.
- Huff, Glen C., II, 1902-03.** 422 Grover St., Kenosha, Wis.
- Huising, Geronimo Huerva, I, '08 (D).** Farmer, San José Estate & Mindoro Co., San José, Mindoro, P. I.
- Humphrey, Mrs. Grace L., IIIb, 1901-03.** 35 Nicollet St., Lowell, Mass.
- Hundley, James Winslow, I, 1908-10.** With Riggs, Rossman & Hunter, Inc., 129 East Redwood St., Catonsville, Md.
- Hunt, Chester Lansing, III, '05 (C).** Machinist, Waltham Watch Co., Waltham, Mass.
- Huntington, Fred Wilder, IV, 1904-06.** East Hampton, Mass.

- Huntington, Paul Osborne, IV, 1908-09.** General Manager, H. M. Sawyer & Son, East Cambridge, Mass.
- Hunton, John Horace, II, '11 (D).** Treasurer and General Manager, Newichawanick Co., South Berwick, Me.
- Hurld, Henry Martyn, IV, 1911-12.** 106 Summer St., Stoneham, Mass. See Service Record.
- Hurtado, Leopoldo, Jr., VI, '10 (D).** General Manager, Hurtado & Co., Uruapan, Mex.
- Huse, Charles Hadley, III, 1916-18.** 19 Campos Ave., Lowell, Mass. See Service Record.
- Hutchinson, Myron Rohn, IV, 1910-11.** 301 Lafayette St., Salem, Mass. See Service Record.
- Hutton, Clarence, III, '03 (C).** Editor, Textile World Journal, 144 Congress St., Boston, Mass.
- Hylan, John Blanchard, II, 1904-06.** 28 Nesmith St., Lowell, Mass.
- Irish, William Frye, II, 1903-05.**
- Irvine, James Andrew, VI, '17 (B.T.E.).** Sales Manager, Textile Department, Rodney-Hunt Machine Co., Orange, Mass.
- Jack, Charles Harrison, VI, 1908-11.** Instructor, Machine Shop, Lowell Textile School, Lowell, Mass.
- Jackson, William Clark, IV, 1902-05.** Leather Chemist, National Aniline and Chemical Co., Inc., 113 High St., Boston, Mass.
- Jackson, William Lawrence, IV, 1909-11.**
- Jefferson, Pauline Cutler, IIIb, 1909-10.**
- Jefferson, Roswell Clifford, IV, 1908-11.** See Service Record.
- Jeffrey, William Gardner, III, 1907-09.** Organ Pipe Voicer, F. I. White Co., Reading, Mass.
- Jelleme, William Oscar, I, '10 (D).** Technical Superintendent, Brighton Mills, Passaic, N. J.
- Jenckes, Leland Aldrich, VI, '08 (D).** Deceased.
- Joel, Carl Belknap, II, 1903-05.** Purchasing Agent, Iver Johnson's Arms and Cycle Works, Fitchburg, Mass.
- Johnson, Arthur Kimbal, IV, '13 (D).** Instructor in Chemistry, Lowell Textile School, Lowell, Mass.
- Johnson, Arthur Whitelaw, 1910-11.** General Manager, National Knitting Co., 905 Clinton St., Milwaukee, Wis.
- Johnson, George Henry, IV, 1914-17.** 168 Webster St., Haverhill, Mass. See Service Record.
- Jones, Clara Evelyn, IIIb, 1902-03.** Decorator of Fine Furniture, The Myer Studio, 50 West 10th St., New York City.
- Jones, Everett Amos, III, '05 (D).** Superintendent and Secretary, Nye & Wait Kilmarnock Corp., Auburn, N. Y.
- Jones, Nathaniel Erskine, VI, 1915-18.** 76 High St., Newburyport, Mass. See Service Record.
- Jones, Sydney Edgar, IV, 1915-16.** Assistant Chemist, Revere Sugar Refinery, Charlestown, Mass.
- Julia, Robert Albert, III, 1903-05.** Superintendent, Cowan Woolen Co., Lewiston, Me.
- Jury, Alfred Elmer, IV, '04 (D).** Director of Textile Section, U. S. Rubber Co., Newark, N. J.
- Kaatze, Julius, VI, 1915-17.** 64 Water St., Lawrence, Mass. See Service Record.
- Kane, John William, III, 1902-04.**
- Kanter, Louis Harris, VI, 1913-14.** 15 Cooper St., Boston, Mass.
- Kaplan, Maurice, IV, 1909-12.** 55½ Allen St., Boston, Mass.

- Katten, Myron, III, 1910-11.** Merchant, A. Katten & Son, Hartford, Conn.
- Kay, Harry Pearson, II, '09 (D).** With Richard L. Wallace & Co., 120 Chestnut St., Philadelphia, Pa.
- Kehew, Walter Everson, IV, 1908-10.**
- Keith, Roy Leon, I, 1908-09.** Treasurer, Plympton Mills, Inc., Plympton, Mass.
- Kelsey, Oscar Eli, VI, 1909-12.** 232 Cabot St., Lowell, Mass. See Service Record.
- Kendrick, Hugh, I, 1901-02.**
- Kennedy, Edmund Thomas, II, 1915-16.** 64 Church St., Amsterdam, N. Y. See Service Record.
- Kennedy, William Henry, I, 1901-02.**
- Kenney, Raymond Joseph, VI, 1917-18.** Office of Fisheries and Game Commission, State House, Boston, Mass.
- Kent, Clarence LeBaron, III, '06 (C).** Salesman, Standard Oil Co., North Andover, Mass.
- Keough, Wesley Lincoln, II, '10 (D).** Assistant Superintendent, Massachusetts Mohair Plush Co., Lowell, Mass.
- Kerr, Louis Rodman, III, 1898-1900.**
- Kimball, Mrs. (Whitaker, Harriet B.), IIb, 1899-1900.** 137 Shaw St., East Braintree, Mass.
- Kimball, Ralph Henry, II, 1910-11.** Died Oct. 7, 1918.
- King, Dan Earl, VI, 1909-11.**
- Kingsbury, Percy Fox, IV, '01 (D).** Head of Color Department, Passaic Print Works, Passaic, N. J.
- Kingston, Norman Baker, IV, 1915-17.** 41 Wave Ave., Wakefield, Mass.
- Kinne, Roy Ward, I, 1904-07.** Housatonic, Mass.
- Kirby, Donald Taylor, IV, 1912-15.** Army Inspector of Ordnance, Hope Webbing Co., Pawtucket, R. I.
- Kitchen, Everett Mayo, II, 1911-12.** Office Clerk, American Woolen Co., Dover, Me.
- Knowland, Daniel Power, IV, '07 (D).** Chemist, Geigy Co., 89 Barclay St. New York City.
- Knowland, Mrs. Daniel P. (Bajus, Helen), IIb, 1905-08.**
- Kono, Hidesaburo, I, 1907-09.**
- Kyle, George Swift, I, 1911-14.** Manager, Shipping and Yarn Department, Muscogee Mfg. Co., Columbus, Ga.
- Lakeman, Fanny Shillaber, IIb, '00 (C).** Salem, Mass.
- Lamb, Arthur Franklin, II, '10 (D).** In business, Cleansing and Dyeing, Rockland, Me.
- Lamb, Horace Emery, II, 1911-13.** 100 Limerock St., Rockland, Me. See Service Record.
- Lamont, Robert Laurance, II, '12 (D).** Representative, Mercury Mfg. Co. of Chicago, Ill., 10 High St., Boston, Mass.
- Lamprey, Leslie Balch, IV, '16 (B.T.D.).** 173 Parker St., Lawrence, Mass.
- Lamson, George Francis, I, '00 (D).** With Morton Co., Worcester, Mass.
- Lane, John William, I, '06 (C).**
- Lane, Oliver Fellows, IV, '15 (B.T.D.).** Chemist, Russia Cement Co., Gloucester, Mass.
- Lanner, Roy, VI, 1916-17.** Wilmington, Mass.
- Larratt, John Francis, III, 1916-17.** Billerica, Mass. See Service Record.
- Laughlin, Edwin Taber, IV, 1911-13.** Chemist and Manager, Processing Works, E. B. Laughlin Textile Mills, Waterford, N. Y.
- Laughlin, James Knowlton, III, '09 (D).** 6313 Sherman St., Germantown, Philadelphia, Pa.
- Laurin, Erick Thursten L., IV, 1915-17.** 40 Lundberg St., Lowell, Mass. See Service Record.

- Lawrence, Harold Emerson, III, 1913-17.** 197 Blue Hills Parkway, Milton, Mass. See Service Record.
- Lawrence, Levi, III, 1904-06.** Honolulu, H. I.
- Lawson, Edward Robert, VI, 1911-14.** 35 Maple Ave., Andover, Mass. See Service Record.
- Leach, John Pelopidas, I, '00 (C).** Farming, Mosby Hall Farm, Littleton, N. C.
- Leck, Arthur James, III, 1907-10.** Textile Expert, U. S. Tariff Commission, 1322 New York Ave., N. W., Washington, D. C.
- Lee, Frank Herman, IV, 1904-06.** Airplane Manufacturer, Whittemore-Hamm Co., Boston, Mass.
- Lee, William Henry, II, '05 (C).** Treasurer, Lee's Wool Shop, Smith Bldg., Holyoke, Mass.
- Leffingwell, Raymond Dyar, I, 1910-12.** 1865 Monroe St., Washington, D. C. See Service Record.
- Leitch, Harold Watson, IV, '14 (B.T.D.).** Chemist, Brightwood Mfg. Co., North Andover, Mass.
- Leonard, Charles William, IV, 1912-14.** Second Hand, Mayo Woolen Co., Millbury, Mass.
- Levey, George, II, 1897-98.** Agent, Black River Woolen Co., Ludlow, Vt.
- Levi, Alfred Sandel, IV, '09 (D).** Assistant Superintendent, Liondale Bleach, Dye and Print Works, Rockaway, N. J.
- Levison, Abner, IV, 1917-18.** Student, Wesleyan University, Middletown, Conn.
- Lewis, Foster Powell, III, 1907-08.** With Hoosac Worsted Mills, North Adams, Mass.
- Lewis, Frank Herbert, VI, 1916-17.** Pelham, N. H. See Service Record.
- Lewis, LeRoy Clark, IV, '08 (D).** Raw Silk Inspector, Wilkes Barre Silk Co., Paterson, N. J.
- Lewis, Richard Boyd, Jr., III, 1913-15.** 86 Loring Rd., Winthrop, Mass.
- Lewis, Walter Scott, IV, '05 (D).** 1773 Lanier Pl., N. W., Washington, D. C. See Service Record.
- Leyland, Thomas William, IV, 1899-1900.** 14 East Cottage St., Roxbury, Mass.
- Liang, Ying Chi, II, 1906-07.**
- Libbee, George Carroll, IV, 1914-17.** 58 Wannalancit St., Lowell, Mass. See Service Record.
- Libby, Irving Roscoe, IV, 1916-17.** 61 Auburn St., Haverhill, Mass.
- Lillis, Marvin Hale, IV, '14 (D).** Dyer, Brightwood Mfg. Co., North Andover, Mass.
- Lincoln, Harold Anderson, 1899-1900.**
- Lipton, Benjamin, VI, 1908-09.**
- Locke, Arthur Church, IV, 1915-17.** 17 Ridge St., Winchester, Mass.
- Longbottom, Parker Wyman, IV, 1915-17.** 5 Bodwell St., Sanford, Me. See Service Record.
- Lontz, Harry Russell, 1908-09.** General Manager, F. & N. Lawn Mower Co., Richmond, Ind.
- Love, George James, IV, 1914-15.** 17 McKinley Ave., Lowell, Mass.
- Loverin, Maitland Calef, IV, 1914-15.** Tilton N. H.
- Lowell, James Everett, II, 1905-08.** 318 Highland St., Worcester, Mass. See Service Record.
- Lucey, Edmund Ambrose, II, '04 (D).** Industrial Engineer, H. L. Gantt, 2915 Singer Bldg., New York City, care of Cheney Bros., South Manchester, Conn.
- Luck, Frank Alfred, I, 1902-03.** Overseer, F. J. Broadbent & Son, Unionville, Conn.
- Lynch, Timothy Henry, II, 1907-08.** 37 Agawam St., Lowell, Mass. See Service Record.
- Lyon, George Aloin, 1897.** Treasurer, Lyon Carpet Co., Lowell, Mass.

- Mabbett, Albert Louis, III, 1908-10.** Superintendent, American Woolen Co., Newport Mills, Newport, Me.
- McAlister, John Worth, I, 1897-98.** Deceased.
- McArthur, Arthur, Jr., II, 1909-11.** 38 Stratford St., West Roxbury, Mass.
- McArthur, Osborn, III, 1910-13.** 27 Dexter Ave., Watertown, Mass.
- Macauley, James Whitfield, VI, 1903-04.**
- MacBrayne, Ralph J., III, 1903-04.** 24 Beech St., Lowell, Mass.
- McBride, William F., II, 1900-01.**
- McCann, Henry Melbourne, III, 1915-17.** 46 Arch St., Pawtucket, R. I. See Service Record.
- McCarthy, Frederick Gregory, IV, 1906-09.** 30 Maple St., Haverhill, Mass.
- McCarthy, Joseph Healy, 1914-15.** 452 Main St., Winchester, Mass. See Service Record.
- McCarthy, Michael Joseph, IV, 1910-11.** 282 Spring St., East Bridgewater, Mass. See Service Record.
- McCleary, Samuel Wilson, IV, 1909-11.** 304 Locust Ave., Amsterdam, N. Y. See Service Record.
- McCleery, Walter Lyde, IV, 1902-05.** 255 Rogers St., Lowell, Mass.
- McClellan, Charles William, IV, 1915-17.** 22 Boomer St., Fall River, Mass. See Service Record.
- McCluskey, Henry James, III, 1904-05.** 322 Suffolk St., Lowell, Mass.
- McCool, Frank Leslie, IV, '10 (D).** Dye Salesman, S. R. David & Co., Inc., 100 Purchase St., Boston, Mass.
- McCreery, Robert Waymire, III, 1911-14.** Salesman, Buyer and Designer, Yorke Shirt Co., Glens Falls, N. Y.
- McDonald, Joseph Stephen, II, 1902-05.** 28 Blossom St., Bradford, Mass.
- McDonnell, William Henry, I, '06 (C).** Lawyer, McDonnell, Drew & White, 40 Court St., Boston, Mass.
- McDuff, Henry Charles, II, 1909-11.** Retail Lumber Business, H. C. McDuff Estate, Pawtucket, R. I.
- McEnany, Charles Herbert, III, 1915-16.** 29 Welles Ave., Dorchester, Mass.
- McGowan, Frank Robert, VI, '15 (B.T.E.).** Textile Technologist, Bureau of Standards, Washington, D. C.
- McGowan, John Paul, VI, 1914-15.** 36 Varney St., Lowell, Mass.
- McGowan, William James, Jr., IV, 1908-10.** Assistant Superintendent, W. P. Fox & Sons Co., Woburn, Mass.
- McIntosh, John Joseph, VI, 1910-11.** 27 Pearson St., Andover, Mass.
- Mackay, Stewart, III, '07 (D).** In the office of the Inspector of Hull Material, U. S. Navy Department, Boston, Mass.
- McKenna, Hugh Francis, IV, '05 (D).** Assistant Manager, Chicago Branch, United Indigo and Chemical Co., 218 West Kenzie St., Chicago, Ill.
- McKenzie, Bertram Dick, IV, 1900-03.** New York Representative and Assistant Treasurer, Standard Bleachery Co., Carlton Hill, N. J.
- Macnee, Forrest Frew, II, 1913-14.** Styler and Salesman, The George E. Kunhardt Corp., 25 Madison Ave., New York City.
- McNeil, Ernest Francis, IV, 1917-18.** 52 Freeman St., Stoughton, Mass.
- McNeillis, Robert Emmett, I, 1911-12.** Died Sept. 4, 1912.
- MacPherson, John Ross, IV, 1906-09.** 80 Prospect St., North Adams, Mass.
- MacPherson, Wallace Angus, III, '04 (D).** Designer, S. Slater & Sons, Inc., Wuskanut Mills, Farnumsville, Mass.
- Madden, Francis Patrick, I, 1910-12.** 20 State Rd., Revere, Mass. See Service Record.
- Magee, Lowell Fitz-Gerald, IV, 1910-11.** 40 Clement Ave., West Roxbury, Mass.
- Maguire, Daniel Henry, Jr., IV, 1911-12.** 16 Pleasant St., Haverhill, Mass.
- Mailey, Howard Twisden, II, '08 (D).** Assistant Superintendent, Worsted Department, Pacific Mills, Lawrence, Mass.

- Main, Moses Taylor, IV, 1909-11. 28 Clark St., Newport, R. I.
 Manchester, Cornelius Earle, VI, 1902-03.
 Mann, Arthur Meade, I, 1897-99.
 Manning, Frederick David, IV, '10 (D). 51 Mt. Vernon St., Fitchburg, Mass.
 See Service Record.
 Manrique, Francisco Jil, I, 1907-09.
 Manship, Nelson Andrew, VI, 1908-10. Salesman Locomobile Co. of America,
 22 West 61st St., New York City.
 Mansur, Arthur F., II, 1903-04. 182 Andover St., Lowell, Mass.
 Marinel, Walter Newton, I, '01 (D). Auto Mechanic, Geo. C. Moore Wool
 Scouring Mills, North Chelmsford, Mass.
 Marland, Harold Webb, VI, 1908-11. 2 Chestnut St., Andover, Mass.
 Marra, William John, III, 1902-05. 160 Pleasant St., Holyoke, Mass.
 Marshall, George Alfred, I, 1897-98. Fruit Grower, Estate of A. A. Marshall,
 Fitchburg, Mass.
 Marshall, George William, VI, 1917-18. Hillside Ave., Warren, Mass.
 Martin, Harry Warren, IV, '11 (D). Chemist, Hood Rubber Co., Watertown,
 Mass.
 Mason, Archibald Lee, VI, '09 (D).
 Mason, Lloyd Albert, IV, 1916-18. 17 Jay St., West Somerville, Mass. See
 Service Record.
 Mather, Harold Thomas, VI, '13 (D). 136 Hanks St., Lowell, Mass. See
 Service Record.
 Mathews, Carl Everette, I, 1915-17. South Berwick, Me. See Service
 Record.
 Matthews, Elmer Clark, II, '17 (D). 55 Washington St., Hudson, Mass. See
 Service Record.
 Mauersberger, Herbert Richard, III, '18 (D). Cotton Yarn Salesman, C. M.
 Plowman & Co., 106 Chestnut St., Philadelphia, Pa.
 Mayo, George Everett, II, 1904-06. Died Sept. 27, 1918.
 Meader, Charlotte Mae, IIIb, 1903-05.
 Meadows, William Ransom, I, '04 (D). Agent of Geo. H. McFadden & Bro.
 of Philadelphia, Milan, Italy.
 Meek, Lotta, IIIb, '07 (C). See Parker, Mrs. Herbert L.
 Meekins, Jasper Adams, I, 1914-15. 86 Chestnut St., North Adams, Mass.
 See Service Record.
 Mehlman, Elliot Leslie, VI, 1913-15. 3 Rackliffe St., Gloucester, Mass.
 Mellor, James Bertram, III, 1915-17. Treasurer and Assistant Superintendent,
 Standard Towel Co., Newton, N. J.
 Merchant, Edith C., IIIb, '00 (C). Supervisor of Drawing, Tewksbury-Dracut
 District, 268 Westford St., Lowell, Mass.
 Merrill, Allan Blanchard, IV, '11 (D). Chemist, B. F. Goodrich Co., Akron,
 Ohio.
 Merrill, Donald French, VI, 1916-17. 282 Buckminster Rd., Brookline, Mass.
 See Service Record.
 Merriman, Earl Cushing, II, '07 (D). Died Sept. 30, 1918.
 Messenger, Frank Mortimer, Jr., I, 1901-02.
 Messenger, George Alson, IV, 1911-14. 16 Rupert St., Springfield, Mass.
 Messer, Ralph William, VI, 1911-12. Billerica, Mass. See Service Record.
 Messer, Raymond Bradley, VI, 1914-17. Died in France, February, 1919.
 Michelsen, Benjamin Franklin, I, 1917-18. Organist, Andover, Mass.
 Michelson, Harold Gerard, I, 1907-10. 25 South 9th St., Newark, N. J.
 Middleton, James Archibald, IV, 1908-11. Ripon, Wis. See Service
 Record.
 Midwood, Arnold Joseph, IV, '05 (D). Salesman, I. Levinstein & Co., 74
 India St., Boston, Mass.
 Miller, Margaret B., IIIb, 1903-04.

- Miller, Severn Allnutt, III, 1911-13. 119 Harrison Ave., Montclair, N. J.
See Service Record.
- Milliken, Frank Roscoe, II, 1903-04. 32 Grace St., Malden, Mass.
- Milot, Aram Arthur, IV, 1912-15. Paragon Worsted Co., Providence, R. I.
- Miner, Carl Henry, II, 1909-10. With Froelich Bros., Inc., 142 North 7th St., Philadelphia, Pa.
- Minge, Jackson C., I, '01 (C).
- Minis, Carol Eugene, I, 1910-12.
- Mitchell, Charles Burton, VI, 1912-15. 156 North St., Saco, Me.
- Mitchell, Nicholas Lovell, III, 1911-13. 105 Spring St., Hull, Mass.
- Mitchell, Thomas E., 1898. 5742 Carlton Way, Hollywood, Cal.
- Miyoshi, Kanae, I, 1915-16.
- Molloy, Francis Henry, II, '16 (D). Assistant Designer, Assabet Mill, Maynard, Mass.
- Monk, Rodney Elijah, IV, 1900-01. Farm Superintendent, Wilder Farm, Gardner, Mass.
- Montgomery, Charles Walker, II, 1916-18. 39 Summit St., North Adams, Mass. See Service Record.
- Moore, Charles Greenwood, IV, 1917-18. Student, Massachusetts Institute of Technology, Cambridge, Mass.
- Moore, Everett Byron, I, '05 (D). Vice President and Manager, Chadbourne & Moore, Inc., Chelsea, Mass.
- Moore, Karl Remick, IV, '11 (D). 110 Morningside Drive, New York City.
See Service Record.
- Moore, Otis Rice, VI, 1915-17. 21 Academy St., Laconia, N. H. See Service Record.
- Moore, William Joseph, IV, 1914-17. 164 Andover St., Lawrence, Mass. See Service Record.
- Moorhouse, Dan William, IV, 1915-17. Plymouth St., East Bridgewater, Mass. See Service Record.
- Moorhouse, William Roy, IV, '01 (D). Chemist, National Aniline and Chemical Co., Inc., 113 High St., Boston, Mass.
- Morin, Joseph Pamphile, IV, 1910-11. 445 Merrimack St., Lowell, Mass. See Service Record.
- Morrell, Willard Blackmer, VI, 1915-16. Wayland, Mass.
- Morrill, Howard Andrew, VI, '16 (D). With Lockwood, Greene & Co., Boston, Mass.
- Morris, Joseph Price, III, 1908-11. 66 Broadway, Utica, N. Y.
- Morris, Merrill George, IV, 1914-17. 644 Varnum Ave., Lowell, Mass. See Service Record.
- Morrison, Fred Clifton, I, '03 (D). Assistant Superintendent, Levi W. Phelps, Ayer, Mass.
- Morse, Allyn Jewett, IV, 1915-17. Research Chemist, Merrimac Chemical Co., North Woburn, Mass.
- Morton, Howard Nowell, VI, 1905-07. President, Lowell Burlap Mfg. Co., Lowell, Mass.
- Morton, John Raymond, IV, 1907-10. 75 Morton St., Jamaica Plain, Mass.
- Moss, Charles P., III, 1897-98.
- Mudge, Gordon, III, 1908-10. The Farish Co., 110 Worth St., New York City.
- Mullen, Arthur Thomas, II, '09 (D). Designer, Sutton Mills, North Andover, Mass.
- Munroe, Sydney Philip, I, '12 (D). Assistant Superintendent, Wamsutta Mills, New Bedford, Mass.
- Murphy, Edward M., II, 1898-99. Doctor, 175 Central St., Lowell, Mass.
- Murphy, Howard Haines, VI, 1908-11. In business, 109 Mt. Vernon St., Boston, Mass.

- Murphy, Raymond Vincent, IV, 1906-07.** 97 Primrose St., Haverhill, Mass.
See Service Record.
- Murray, James, IV, '13 (D).** Works Manager, Crescent Color and Chemical Works, Dunellen, N. J.
- Murray, James Andrew, II, '10 (D).** Clerk, Talbot Clothing Co., 403 Washington St., Boston, Mass.
- Murray, Thomas Henry, IV, 1906-07.** 75 Ocean St., Dorchester, Mass.
- Murray, Walter Robert, III, 1908-10.** 16 Union St., Melrose, Mass.
- Musgrave, Albert Francis, IV, 1905-07.**
- Najar, Garabed George, IV, '03 (D).** Overseer, Dyeing and Bleaching, Monument Mills, Housatonic, Mass.
- Nay, Frank Bartlett, IV, 1916-17.** Machinist, U. S. Navy Yard, Portsmouth, N. H.
- Neelon, Raymond Vincent, IV, 1907-09.** Main St., Medway, Mass.
- Nelson, Donald Marr, IV, 1915-16.** Chicago, Ill.
- Nettel, Frank Charles, III, 1907-10.** Goffs Falls, N. H.
- Newall, John Douglas, IV, '09 (D).** Department Superintendent, Sayles Bleacheries, Saylesville, R. I.
- Newcomb, Guy Houghton, IV, '06 (C).** Assistant Manager, E. I. duPont de Nemours & Co., 1055 McCormick Bldg., Chicago, Ill.
- Newell, Carroll Doane, IV, 1908-09.** 319 Main St., Winchester, Mass.
- Newell, Herbert Matteson, I, 1911-14.** Cotton Classer, Newburger Cotton Co., Memphis, Tenn.
- Neyman, Julius Ellis, IV, '15 (B.T.D.).** Chemist, U. S. Worsted Co., North Chelmsford, Mass.
- Nichols, Raymond Elmore, VI, '10 (D).** Superintendent, Lowell Bleachery, St. Louis, Mo.
- Niven, Robert Scott, VI, '12 (D).** Draftsman, General Electric Co., Lynn, Mass.
- Nolde, George Horst, IV, 1912-13.** Hosiery Manufacturer, Nolde & Horst Co., Reading, Pa.
- Norris, Daniel, II, 1903-05.** Woburn, Mass.
- North, Arthur Henry, Jr., II, 1909-10.** 160 Beach St., Roslindale, Mass.
- Noyes, Joseph Edward, IV, 1903-04.** Georgetown, Mass.
- Noyes, Philip Allan, III, 1908-11.**
- O'Brien, James Joseph, I, 1904-05.** 227 West London St., Lowell, Mass.
- O'Brien, John Albert, III, 1906-08.** Superintendent, Assabet Mills, Maynard, Mass.
- O'Brien, Philip Francis, II, '15 (D).** Cost Accountant, Frederick Bond Cherrington and Associates, 79 Milk St., Boston, Mass.
- O'Brien, Walter Augustine, Jr., VI, 1910-11.** With Sterling Knit Goods Co., Cambridge, Mass.
- O'Connell, Clarence Edward, IV, '11 (D).** Second Hand, Boston Mfg. Co., Waltham, Mass.
- O'Connell, Maurice Daniel, III, 1912-13.**
- O'Connor, Lawrence Dennis, VI, '17 (D).** Textile Inspector, Quartermaster's Department, Boston, Mass.
- O'Donnell, John Delaney, I, '04 (C).**
- Oehme, Fred Waldo, II, 1908-09.** 22 Milton St., Worcester, Mass.
- O'Hara, Benjamin Franklin, IV, 1907-08.**
- O'Hara, William Francis, IV, '04 (C).**
- O'Mahoney, Joseph Vincent, II, 1908-09.** 1057 Essex St., Lawrence, Mass.
- O'Neill, Charles Francis, IV, 1910-12.** 175 Walker St., Lowell, Mass.
- Opitz, Charles Henry, I, 1904-06.** Supt. of Commercial Orchard, Brookside Orchard, Waynesville, N. C.

- O'Reilly, Katherine Frances, III, 1903-04. 59 Temple St., Lowell, Mass.
- O'Riordan, Andrew, VI, 1905-08.
- Ormiston, John Edwin, IV, 1906-07. Superintendent of Dyeing, Puritan Mill, American Woolen Co., Plymouth, Mass.
- Orpet, Edward Owen, Jr., IV, 1909-10.
- O'Sullivan, Bartholomew Bennett, IV, 1905-08. 516 Lawrence St., Lowell, Mass. See Service Record.
- Outwater, John Raymond, I, 1908-10. J. W. Ferguson Construction Co., Paterson, N. J.
- Oxley, William, II, 1900-01. Oxford, N. S.
- Paine, Harold DeBlois, 1901-03. 28 Salem St., Wakefield, Mass.
- Palais, Samuel, IV, '18 (B.T.C.). Textile Chemist, Depot Quartermaster, Boston, Mass.
- Paradis, Lucien Absalon, III, 1902-03. 7, rear 21 Hancock St., Lowell, Mass.
- Park, Kenneth Bell, IV, 1912-16. 2 Maple Rd., Winchester, Mass.
- Parker, Bartholomew Moore, I, '01 (D). In business, West Raleigh, N. C.
- Parker, Clarence Arthur, III, 1905-07. Assistant Treasurer, Parker Spool and Bobbin Co., Lewiston, Me.
- Parker, Everett Nichols, I, '05 (D). Manufacturer, Parker Spool and Bobbin Co., Lewiston, Me.
- Parker, Harry Carmi, III, '00 (C). Salesman, George Lincoln Parker, 100 Boylston St., Boston, Mass.
- Parker, Herbert Lang, VI, 1905-07. 4 Brookside Cir., Auburn, Me.
- Parker, Mrs. Herbert L. (Meek, Lotta L.), IIIb, '07 (C). 4 Brookside Cir., Auburn, Me.
- Parker, Hubert Frederic, VI, 1914-17. Mechanical Draftsman, Springfield Arsenal, Springfield, Mass.
- Parker, Lester Edwin, VI, 1915-17. Whitman, Mass. See Service Record.
- Parkis, William Lawton, I, '09 (D). Investigator, Cheney Bros., South Manchester, Conn.
- Parks, Paul B., I, 1898-99. Assistant General Manager, The Erwin Cotton Mills Co., West Dorham, N. C.
- Parsons, Brackett, VI, 1916-17. 3 Robertson St., East Milton, Mass. See Service Record.
- Paton, Raymond, III, 1906-08. 613 California St., Newtonville, Mass.
- Peabody, Roger Merrill, II, '16 (D). 55 Harvard St., Everett, Mass. See Service Record.
- Peach, Harold Emerson, IV, 1912-13. 3 Cedar Ct., Salem, Mass.
- Pearce, Frederick Henry, II, 1897-98. Died Aug. 14, 1911.
- Pearl, Lloyd Mason, II, 1911-12. Johnson, Vt. See Service Record.
- Pearson, Alfred Henry, IV, '11 (D). Salesman, Dunker & Perkins Co., 287 Atlantic Ave., Boston, Mass.
- Pease, Chester Chapin, I, '09 (D). Superintendent of Manufacturing, U. S. Rubber Co. (Textile Section), Newark, N. J.
- Peck, Carroll Wilmot, IV, '13 (D). Salesman, National Aniline and Chemical Co., Inc., 21 Burling Slip, New York City.
- Peckham, Harold Landers, IV, 1916-17. 22 Rhode Island Ave., Newport, R. I. See Service Record.
- Peckham, Robert Briggs, III, 1911-12. Buyer, Arthur A. Williams Shoe Co., Holliston, Mass.
- Peckham, Stockman Cole, II, 1916-17. 20 Everett St., Newport, R. I. See Service Record.
- Peirce, Charles, III, 1915-17. Design Room, Massachusetts Cotton Mills, Lowell, Mass.
- Peirce, Florence Ethel, IV, 1900-01. See Wright, Mrs. Howard H. P.
- Pender, John Edward, IV, 1915-16. 21 Pearl St., Ayer, Mass.

- Pensei, George Robert, IV, '13 (B.T.D.).** Chemist, Shuttleworth Bros. Co., Amsterdam, N. Y.
- Perham, George Leonard, 1897.** 53 Lamb St., Lowell, Mass.
- Perkins, Jacob Roswell, I, 1910-11.** Martin St., Essex, Mass.
- Perkins, John Edward, III, '00 (D).** Superintendent, S. N. & C. Russell Mfg. Co., Pittsfield, Mass.
- Perkins, Joshua Dean, III, '08 (D).** Overseer, Amoskeag Mfg. Co., Manchester, N. H.
- Pertman, Samuel, IV, '17 (B.T.C.).** 196 Hale St., Lowell, Mass. See Service Record.
- Petty, George Edward, I, '03 (C).** Textile Inspector, Quartermaster's Corps, Greensboro, N. C.
- Pevey, John Francis, III, 1902-05.**
- Phaneuf, Horace H., II, 1902-04.** 261 Main St., Nashua, N. H.
- Phillips, Fred Thomas, IV, 1908-11.** 15 Chippewa Ct., Lynn, Mass.
- Pike, James Harold, VI, 1911-12.** 41 Walnut St., Waltham, Mass.
- Pillsbury, Ray Charles, I, '13 (D).** Efficiency Engineer, Cheney Bros., South Manchester, Conn.
- Pinanski, Samuel, III, 1910-12.** 949 Blue Hill Ave., Dorchester, Mass.
- Pirie, Robert Henry, III, 1910-11.** 48 Bradstreet Ave., Revere, Mass.
- Pitman, Charles Joseph, II, 1915-17.** Assistant Manager, Pitman Mfg. Co., Laconia, N. H.
- Plaisted, Webster, II, '18 (D).** 105 Pleasant St., Arlington, Mass. See Service Record.
- Plowman, Claude Montgomery, I, 1903-04.** Cotton Yarn Merchant, C. M. Plowman & Co., 106 Chestnut St., Philadelphia, Pa.
- Plummer, Elliott Barton, IV, '13 (D).** Died Jan. 14, 1919.
- Plummer, Ray, IV, 1916-17.** Milton, N. H.
- Plummer, Stanley Richardson, III, 1915-17.** 25 Orient Ave., Melrose, Mass. See Service Record.
- Pohlman, George Charles, IV, 1897-99.** 56 Goddard St., Fitchburg, Mass.
- Poor, Nathan Holt, 2d, IV, 1910-12.** 110 Hobart St., Danvers, Mass.
- Poore, Frederic Samuel, II, 1906-07.** Lumber Business, Bean & Poore, Lawrence, Mass.
- Possner, Albert Washington, II, 1904-06.** Manufacturer, Metal Stampings, Unique Findings and Supply Co., Providence, R. I.
- Potter, Carl Howard, I, '09 (D).** With Brighton Mills, Passaic, N. J.
- Potter, Robert Campbell, IV, 1913-14.** 41 Osgood St., Lowell, Mass. See Service Record.
- Potter, W. Wallace, I, 1901-02.** 228 Broadway, Pawtucket, R. I.
- Pottinger, James Gilbert, II, '12 (D).** 80 Stratford St., West Roxbury, Mass. See Service Record.
- Powers, Walter Wellington, IV, 1913-17.** 1A Ivy St., Boston, Mass. See Service Record.
- Pradel, Alois Joseph, III, '00 (D).** Designer, Montrose Worsted Co., Woonsocket, R. I.
- Pradel, Mrs. Alois J. (Walker, Anna G.), IIIb, '03 (C).** 534 South Main St., Woonsocket, R. I.
- Pratt, Albert S., I, 1900-01.** 50 Bartlett St., Lewiston, Me.
- Prescott, Walker Flanders, IV, '09 (D).** Chemical Sales Department, Sherwin-Williams Co., 897 Centre St., Montreal, Can.
- Presson, William Herbert, IV, 1903-04.** In business, 87 Rogers St., Gloucester, Mass.
- Preston, Harold Lorenzo, II, 1909-12.** Quality Man, Cheney Bros., South Manchester, Conn.
- Preston, Robert Franklin, I, 1901-03.** Fisher Mfg. Co., Fisherville, Mass.
- Prince, Sylvanus Cushing, VI, '08 (D).**

- Prior, Everett Leonard, I, 1902-05.** 25 Greystone Rd., Malden, Mass.
- Proctor, Braman, IV, '08 (D).** Dyestuff Salesman, Kuttroff, Pickhardt & Co., Inc., Boston, Mass.
- Putnam, Burleigh, I, 1904-05.** 4503 Forestville Ave., Chicago, Ill.
- Putnam, George Ives, IV, '16 (B.T.D.).** Chief Textile Chemist and Buyer of Dyestuffs, Mohawk Valley Cap Factory, Utica, N. Y.; also Consulting Chemist to Diamond Chemical Co., Inc., and Utica Laboratories, Utica, N. Y.
- Putnam, Leverett Nelson, IV, '10 (D).** Overseer of Dyeing, Arlington Mills, Lawrence, Mass.
- Putnam, Philip Clayton, IV, '13 (D).** Dyer, Sayles Finishing Plants, Saylesville, R. I.
- Quinn, Leo Edward, II, 1913-14.**
- Racicot, Marie Emelia, III, 1913-16.** Designing, Pentucket Narrow Fabric Co., Lowell, Mass.
- Radcliffe, Arthur Dawson, II, 1909-10.** Chestnut St., Shelton, Conn.
- Ramsdell, Atherton Russell, I, 1897-99.** Insurance Engineer, Hall-Morse Co., Inc., 128 William St., New York City.
- Ramsdell, Theodore Ellis, I, '02 (D).** Agent, Monument Mills, Housatonic, Mass.
- Rasche, William August, III, '03 (D).** Deceased.
- Ray, James Fuller, III, 1907-10.** Greenwich, Conn. See Service Record.
- Raymond, Charles Abel, IV, '07 (D).** Assistant Superintendent, N. E. Fuel and Transportation Co., Everett, Mass.
- Rayner, Charles Hanson, 1910-13.** With American Felt Co., Franklin, Mass. 69 Cherry St., Waltham, Mass.
- Read, Paul Alfred, I, 1906-07.** Barnaby Mfg. Co., Fall River, Mass.
- Reader, Louise Richmond, IIb, 1901-04.** 216 Appleton St., Lowell, Mass.
- Reardon, John Francis, IV, 1903-05.** Playground Supervisor, Suffolk School, Rainsford Island, Mass.
- Reardon, John Sylvester, VI, 1905.**
- Redmond, Paul Alonzo, I, 1903-04.** Rome, Ga.
- Reed, George Edward, I, 1897-98.** Assistant Superintendent, U. S. Cartridge Co., Lowell, Mass.
- Reed, Norman Bagnell, I, '10 (D).** Assistant to Agent, Lawrence Mfg. Co., Lowell, Mass.
- Reilly, Thomas William, I, 1905-07.** New York Agent, Crystal Spring Bleachery, Thwaites, Mass.
- Reynolds, Fred Bartlett, II, '08 (D).** Purchasing Agent, M. T. Stevens & Sons Co., North Andover, Mass.
- Reynolds, Isabel Halliday, III, '03 (C).** Clerk, Pacific Mills Print Works, Lawrence, Mass.
- Rich, Edward, IV, '15 (B.T.D.).** 401 Manchester St., Manchester, N. H. See Service Record.
- Rich, Everett Blaine, III, '11 (D).** Managing Director, C. H. Greenleaf Co., Hotel Vendome, Boston, Mass.; also Manager, Profile House, White Mountains, N. H.
- Richardson, George Oliver, IV, '16 (B.T.D.).** Woburn Rd., Lexington, Mass. See Service Record.
- Richardson, Leroy, III, 1911-12.** 56 2d St., Lowell, Mass.
- Richardson, Richardson Perry, I, '13 (D).** With Stark Mills, Manchester, N. H.
- Richmond, Lysander, IV, 1912-14.** 47 Courtland St., Middleborough, Mass.
- Ricks, David Absolom, I, 1900-01.** Superintendent, The Mayo Mills, Mayodan, N. C.
- Ricks, Theophilus Edward, I, 1900-01.**
- Rider, William Jarvis, VI, 1915-17.** 11 New St., Danbury, Conn.

- Ridley, Charles King, VI, 1910-11.
- Riggs, Homer Chase, VI, '17 (B.T.E.). Forest Ave., South Essex, Mass.
- Riley, Thomas F., IIb, 1901-04. 339 Concord St., Lowell, Mass.
- Ringland, Hans Sylvester, Jr., II, 1909-10. 86 Pearl St., Keene, N. H.
- Ripley, George Keyes, II, '17 (D). General Manager, Troy Blanket Mills, Troy, N. H.
- Robbins, Ray Nichols, II, 1911-12. Mill Styler, American Woolen Co., 4th Ave. at 18th St., New York City.
- Roberson, Pat Howell, I, '05 (C). Merchant, Jas. R. Roberson & Sons, Cropwell, Ala.
- Roberts, Carrie Isabel, IIb, '05 (C). Designing and Craft Work, 571 Westford St., Lowell, Mass.
- Roberts, Roscoe Owen, I, 1914-16. Machine Erector, Saco-Lowell Co., Sylacauga, Ala.
- Robertson, George Offutt, II, 1911-13. 470 Andover St., Lowell, Mass. See Service Record.
- Robertson, Norval, IV, 1904-07. Overseer of Dyeing, Merrimack Mfg. Co., Lowell, Mass.
- Robinson, Charles A., III, 1898-99.
- Robinson, Ernest Warren, IV, '08 (D). Superintendent, Belding Bros. & Co., Rockville, Conn.
- Robinson, William Carleton, III, '03 (C). Inspector, H. F. Livermore & Co, 85 Pearl St., Boston, Mass.
- Robson, Frederick William Charles, IV, '10 (D).
- Roche, Raymond Vincent, IV, '12 (D). Overseer, Bleaching and Mercerizing, Renfrew Mfg. Co., Adams, Mass.
- Rodman, Walter, Jr., II, 1902-04. Secretary and Treasurer, Rodman Mfg. Co., Lafayette, R. I.
- Rogers, Miles Eugene, I, 1909-11. Assistant Superintendent, Equinox Mill, Anderson, S. C.
- Rooney, Henry Thomas, IV, 1914-16. Assistant Chemist, Pacific Print Works, Lawrence, Mass.
- Ross, Edward Stuart, II, 1915-17. 17 Spafford Rd., Milton, Mass. See Service Record.
- Ross, Ernest Elmore, VI, 1911-13. Accountant, Edison Electric Illuminating Co. of Boston, 39 Boylston St., Boston, Mass.
- Rothschild, Edward J., I, 1901-05. Woodville, Miss.
- Rowe, Frank Eleazar, Jr., VI, 1911-13. Superintendent, The Argo Mills Co., Gloucester, N. J.
- Rowell, John Irving, I, 1914-15. 784 Chestnut St., Manchester, N. H. See Service Record.
- Rundlett, Arnold Dearborn, VI, '12 (D). Assistant Superintendent, Albany Felt Co., Albany, N. Y.
- Russell, Allen Howard, III, 1900-01. 31 Groveland St., Haverhill, Mass.
- Russell, Edwin Forrest, VI, 1905-06. Theatrical Business, Brewster Amusement Co., 39 Court St., Boston, Mass.
- Ryder, Howard Wheeler, I, 1910-12. Salesman, U. S. Tire Co., 560 Commonwealth Ave., Boston, Mass.
- Sampson, Albert Edward, IV, 1911-12. In charge of Research Dye Laboratory, National Aniline and Chemical Co., Buffalo, N. Y.
- Sampson, Arthur Haskell, IV, 1911-12. 86 South St., Gorham, Me.
- Sanborn, Elmer Earle, 1915-16. Franklin, N. H.
- Sanborn, Ralph Lyford, VI, '16 (B.T.E.). West Kennebunk, Me.
- Sanborn, Waldo Harvey, IV, 1906-09. Treasurer, Knox St. Garage, Lawrence, Mass., and Internal Comb. Motor Expert, Boston Navy Yard, Charlestown, Mass.

- Santry, Walter Leo, II, 1909-10. Died March 23, 1910.
- Sargent, James Minter, VI, 1905-08.
- Sargent, William Frederick II, 1903-04. Died Oct. 11, 1918.
- Saunders, Harold Fairbairn, IV, '09 (D). Chemist, Pacific Mills, Lawrence, Mass.
- Sawyer, Miss B. T., IIIb, 1897.
- Sawyer, Joseph Warren, IV, '15 (B.T.D.). Assistant Chemist, Boston Navy Yard, Boston, Mass.
- Sayward, Ralph Kay, I, 1909-11. 2 Pine St., Winchester, Mass.
- Schaetzel, Andre Paul, IV, 1916-18. With The Appleton Co., Lowell, Mass.
- Scherer, George Henry, IV, 1906-07. Walpole, Mass.
- Schmidt, Hartman Frank, III, 1914-15. Instructor, Design Department, Lowell Textile School, Lowell, Mass.
- Schmiedel, Alfred George, I, 1915-17. Assistant Manager, Georgian Textile Mills, East Rutherford, N. J.
- Schofield, Herbert Mellor, II, 1901-02.
- Schofield, Percy Watson, II, 1911-12. 1201 Victoria Ave., Venice, Cal.
- Schuster, Raymond Hector, II, 1916-17. 67 West St., Franklin, Mass. See Service Record.
- Scoboria, Glendon Arthur, VI, 1916-18. South Chelmsford, Mass. See Service Record.
- Scott, George Wallace, III, 1914-15. 947 Schuyter St., Utica, N. Y. See Service Record.
- Scribner, Paul Austin, II, 1908-09. North Chelmsford, Mass.
- Searle, David Harold, IV, 1908-10. Boss Dyer, Anco Mills, Inc., Wilkesville, Mass.
- Selden, James Kirtland, II, 1916-17. 42 School St., Andover, Mass. See Service Record.
- Serrat, Harold Dillaway, I, 1901-04. 42 Orient St., Malden, Mass.
- Shaber, Hyman Jesse, VI, '17 (B.T.E.). 35 Factory St., Nashua, N. H. See Service Record.
- Shaw, Benjamin Choate, I, 1903-05. Superintendent, Boston Duck Co., Bondsville, Mass.
- Shea, Daniel Joseph, IV, 1904-07. 29 3d St., Fitchburg, Mass.
- Shea, Edward Augustine, II, 1916-17. 36 Reed Ave., Everett, Mass.
- Shea, Francis James, II, '12 (D). 14 Clifford Ave., Ware, Mass. See Service Record.
- Shedd, Howard Proctor, IV, 1910-13. Plant Chemist and Assistant Superintendent, West Virginia Pulp and Paper Co., Mechanicville, N. Y.
- Shenton, Charles Marshall, VI, 1905-06. Died May 24, 1915.
- Shepard, Howell Field, I, 1915-16. Amherst, Mass. See Service Record.
- Sherwell, Walter Noyes, III, 1902-04. Engineer, American Telephone and Telegraph Co., 195 Broadway, New York City.
- Shine, Timothy Callistus, IV, 1914-16. 323 Lowell St., Lawrence, Mass.
- Shuman, Waldo Irving, 1902-04. Member of N. Y. Stock Exchange, Shuman & Seligman, 30 Broad St., New York City.
- Shumway, Alonzo Harrison, I, 1902-04. Treasurer and Agent, Atlas Buckram Co., Taunton, Mass.
- Shuttleworth, Howard Lionel, VI, 1916-17. 321 Guy Park Ave., Amsterdam, N. Y. See Service Record.
- Shuttleworth, Wright, II, 1909-10. 303 Guy Park Ave., Amsterdam, N. Y.
- Sidebottom, Leon William, IV, '11 (D). Colorist, Essex Aniline Works, South Middleton, Mass.
- Signor, Clarence Edmund, IV, 1908-11. 15 Lagrange St., Worcester, Mass.
- Silcox, Frederick Eugene, VI, 1917-18. 541 Westford St., Lowell, Mass.
- Sill, Walter George, IV, 1904-05. Owner and Manager, Sill Paper Co., 200 5th Ave., New York City.

- Simpson, Kenneth Martin, VI, 1912-15.** 53 Greenleaf St., Malden, Mass.
See Service Record.
- Sinclair, Edward Leo, IV, 1912-13.** Senior Inspector of Airplanes and Airplane Engines, Bureau of Aircraft Production, 360 Madison Ave., New York City.
- Sjostrom, Carl Gustof Verner, Jr., III, '17 (D).** 58 Church St., Ware, Mass.
See Service Record.
- Skilton, Frederick Edward, IV, 1908-09.** 14 Rogers Ave., Somerville, Mass.
- Sleeper, Robert Reid, IV, '00 (D).** Instructor of Dyeing, Lowell Textile School, Lowell, Mass.
- Smith, Albert Adams, I, '99 (D).** Deceased.
- Smith, Byron Dame, VI, 1913-14.** North Hampton, N. H. See Service Record.
- Smith, Doane White, II, '10 (D).** 206 High St., Springfield, Mass. See Service Record.
- Smith, Edward Parker, II, 1910-11.** Holliston, Mass.
- Smith, Frank Leonard, II, 1909-10.** Beverly, Mass. See Service Record.
- Smith, Harry Monroe, IV, 1906-09.** Manufacturer, D. B. Smith Sons Co., Pine Meadow, Conn.
- Smith, LeRoy Ballou, II, 1914-15.** General Manager, Cumberland Worsted Mills, Woonsocket, R. I.
- Smith, Malcolm Howard, VI, 1913-14, 1916-17.** 115 Prospect St., Gloucester, Mass. See Service Record.
- Smith, Ralston Fox, I, '04 (C).** Manager and Secretary, The Cleveland Battery and Electric Co., 974 East 66th St., Cleveland, Ohio.
- Smith, Stephen Eaton, I, '00 (D).** Head of Cotton Yarn Department, Lowell Textile School, Lowell, Mass.
- Smith, Theophilus Gilman, Jr., IV, '10 (D).** Farming, Groton, Mass.
- Smith, William Martin, I, 1902-03.** 102 Perkins St., Somerville, Mass.
- Snelling, Fred Newman, II, '03 (D).** With American Express Co., Haverhill, Mass.
- Soderberg, Charles Ernest, I, 1897-98.**
- Sokolsky, Henry, VI, '17 (B.T.E.).** 15 Sheldon St., Lowell, Mass.
- Sosnowski, Jack Norman, III, 1915-17.** 18 Wolcott St., Boston, Mass.
- Southgate, Herbert Ralph, II, 1904-07.** Charleston, Me.
- Spain, John William, I, 1897-99.** Died in 1915.
- Spencer, Constant Southworth, II, 1910-11.** Died Oct. 17, 1911.
- Spencer, John Harry, Jr., VI, 1912-13.** 513 Forest Rd., Roland Park, Md.
- Spiegel, Edward, II, '03 (C).** Theatrical Business, New York City.
- Squires, John Norton, III, 1905-06.** 107 Chestnut St., Englewood, N. J.
- Stahl, Jerome Guttman, I, 1916-17.** 283 Main St., Berlin, N. H.
- Standish, John Carver, IV, '11 (D).** Superintendent, F. C. Huyck & Sons, Albany, N. Y.
- Staples, Annabel Hoyt, III, 1903-04.** 24 Staples St., Lowell, Mass.
- Stebbins, Joseph Blodgett, II, 1907-09.** South Deerfield, Mass.
- Stevens, Dexter, I, '04 (D).** Manager, Esmond Mills, Esmond, R. I.
- Stevens, Harold Scott, II, 1911-12.** 9 Brockton Ave., Haverhill, Mass.
- Stevens, Howard Allen, I, 1909-11.** 5 Elm St., Malden, Mass. See Service Record.
- Stevens, Samuel Dale, Jr., II, 1915-16.** 623 Osgood St., North Andover, Mass.
- Stevens, Tyler Abbott, 1897.** 53 Central St., Lowell, Mass.
- Stevenson, Murray Reid, III, '03 (C).** Farming, Princeton Depot, Mass.
- Stewart, Arthur Andrew, II, '00 (D).** Head of Finishing Department, Lowell Textile School, Lowell, Mass.
- Stewart, Samuel, I, 1897-99.** Resident Agent, Edwards Mfg. Co., Augusta, Me.
- Stewart, Walter Lawrence, III, '03 (D).** Cotton Goods Converter, Charles Kohlman & Co., Inc., 40 Thomas St., New York City.

- Stiegler, Harold Winfred, IV, '18 (B.T.C.).** Research Chemist, National Aniline and Chemical Co., Buffalo, N. Y.
- Stimpson, Ralph Willis, I, 1897-98.**
- Stitt, Harold Irwin, II, 1897-98.** 223 Arlington St., Youngstown, Ohio.
- Stohn, Alexander Charles, III, '06 (C).** Mill Manager, C. Stohn, Hyde Park, Mass.
- Stone, Fred G. A., II, 1900-03.** Osgood St., North Andover, Mass.
- Stone, Ira Aaron, IV, '09 (D).** President and General Manager, American Waste Co., Inc., 10 High St., Boston, Mass.
- Storer, Francis Everett, II, '07 (D).** Cashier, Windham County National Bank, Danielson, Conn.
- Stott, Charles Henry, IV, 1904-07.** Technical Man and Salesman, E. I. du Pont de Nemours & Co., 201 Devonshire St., Boston, Mass.
- Stowell, Joe Spearman, I, 1905-07.**
- Stratton, Rodney Wilson, II, 1908-09.** 46 Hudson St., North Adams, Mass.
See Service Record.
- Stratton, Wallace Edson, III, 1899-1901.** 45 Hancock St., Boston, Mass.
- Strauss, Leon, III, 1906-07.** With Leopold, Morse & Co., Boston, Mass.
- Strauss, Moses, I, 1911-12.** Merchant, Alexander Strauss, Inc., Lowell, Mass.
- Strickland, George Henry, IV, 1916-18.** 3 Greenfield St., Lawrence, Mass.
- Stronach, Irving Nichols, IV, '10 (D).** Dyer, Renfrew Mfg. Co., Adams, Mass.
- Strong, Mrs. Alden G. (Butterfield, Pearl Mae), IIIb, 1900-01.** 11 Groveland St., Battle Creek, Mich.
- Stubbs, Samuel Asa, IV, 1909-12.** 42 Cedar St., Haverhill, Mass.
- Stursberg, Albert Herman, II, 1904-05.** 18 East 67th St., New York City.
- Stursberg, Paul William, II, '07 (D).** Died in 1913.
- Sturtevant, Albert William, IV, '17 (D).** 384 Main St., Middletown, Conn.
- Sturtevant, Herbert Alvan, VI, 1912-14.** 60 Roseland St., North Cambridge, Mass. See Service Record.
- Sullivan, John David, VI, '12 (D).** With Haverhill Box Board Co., Bradford, Mass.
- Sullivan, Joseph Ignatius, II, 1914-17.** 29 Hancock St., Everett, Mass. See Service Record.
- Sullivan, Walter John, IV, 1915-18.** Chemist, E. I. duPont de Nemours & Co., Jackson Laboratory, Deepwater Point, N. J.
- Summersby, George Walter, I, 1908-10.** With Amory, Browne & Co., 48 Franklin St., Boston, Mass., as General Manager of Indian Head Mills of Alabama and Lowe Mfg. Co. of Alabama.
- Summersby, William Calvin, III, 1912-14.** 125 Prospect St., Lawrence, Mass.
See Service Record.
- Sunbury, Herbert Ellsworth, VI, '18 (B.T.E.).** Wamesit, Mass. See Service Record.
- Sussman, Joseph Abraham, IV, 1912-13.** 72 Islington St., Portsmouth, N. H.
- Sutcliffe, Florence Lucinda, IIIb, 1900-01.** Main St., North Andover, Mass.
- Sutton, Leslie Emans, I, '17 (D).** Civilian Inspector, Ordnance Department, care of Boott Mills, Lowell, Mass.
- Swan, Guy Carleton, II, '06 (D).** Chemist, U. S. Food Research Laboratory, 1833 Chestnut St., Philadelphia, Pa.
- Swanton, Charles Virgil, 1901-02.** 75 Salem St., Andover, Mass.
- Swett, Esther Melvin, IIIb, 1908-09.**
- Swift, Edward Spooner, I, '02 (D).** Clergyman, Woodstock College, Woodstock, Md.
- Sydeman, William Ralph, IV, 1914-15.** 169 Merrimack St., Lowell, Mass.
See Service Record.

- Sylvain, Charles Emile, VI, '13 (D).** With International Machinery Co., 104 Pearl St., New York City, at Rio de Janeiro, Brazil.
- Syme, James Francis, II, '00 (D).** General Manager, D. Goff & Sons, Pawtucket, R. I.
- Tabor, James Atwood, II, 1913-15.** Corinna, Me.
- Taft, Leroy Chester, II, 1911-12.** Union, N. H.
- Takahashi, Gentaro, 1915-16.** Student, College of Business Administration, Boston University, Boston, Mass.
- Taylor, Clair S., II, 1899-1902.** 24 Institute Rd., Worcester, Mass.
- Taylor, Henry Colwell, II, 1903-06.** 12 Wachusett St., Lowell, Mass.
- Taylor, Ralph Edward, II, 1903-05.** In business, Charlton City, Mass.
- Tenney, Frank Forster, VI, 1912-14.** Principal, Airplane School, West Side Y. M. C. A., 318 West 57th St., New York City.
- Terry, Henry Kingsbury, Jr., II, 1899-1900.**
- Thaxter, Joseph Blake, Jr., II, '12 (D).** Salesman, Smith & Dove Mfg. Co., Andover, Mass.
- Thayer, Frank Lawrence, II, 1916-17.** 17 College Ave., Waterville, Me. See Service Record.
- Thomas, Roland Vincent, I, '05 (C).**
- Thompson, Everett Leander, I, '05 (D).** Salesman, S. F. Bowser & Co., Inc., Bradford, Mass.
- Thompson, Henry James, IV, '00 (D).** Dyer, Boston Rubber Shoe Co., Malden, Mass.
- Thompson, Willis, I, 1905-06.** 2524 North Charles St., Baltimore, Md.
- Thomson, Alexander, II, 1910-12.** Master, Hollis School, Braintree, Mass.
- Tilton, Elliott Thorp, II, '99 (D).** Died January, 1917.
- Ting, Lien Shing, II, 1906-07.** Shanghai, China.
- Todd, Walter Ernest, III, 1915-17.** 116 School St., Webster, Mass. See Service Record.
- Toovey, Sidney Ernest, II, '04 (C).** Assistant Manager, S. S. Learnard Co., 50 Faneuil Hall Market, Boston, Mass.
- Toshach, Reginald Alexander, II, '11 (D).** 135 Lowell Ave., Methuen, Mass. See Service Record.
- Totoki, Hazime, 1899-1900.** Tokio, Japan.
- Towle, Josephine, IIIb, 1897-98.**
- Townsend, Henry Albert, II, 1916-18.** Milton Mills, N. H.
- Townsend, James Gordon, II, 1913-14.** Salesman, Thos. G. Plant Co., Boston, Mass.
- Treadway, Wolcott West, 1912-13, III.** Died in France from effects of wounds received in action.
- Trubey, Nellie Bertha, IIIb, 1897.** North Chelmsford, Mass.
- Trull, John Chester, III, 1897-1900.** Tewksbury, Mass.
- Tucker, Harold Berton, VI, 1911-15.** Assistant Superintendent, Construction and Repairs, Merrimac Chemical Co., North Woburn, Mass.
- Tyler, Lauriston Whitcombe, II, '16 (D).** 16 Sheridan St., Haverhill, Mass. See Service Record.
- Uschanoff, Nicholas, II, 1909-10.** Helsingfors, Finland.
- Valpey, Frank Daniel Reginald, VI, 1906-09.** 131 Elm St., Andover, Mass. See Service Record.
- Varnum, Arthur Clayton, II, '06 (D).** Superintendent, Hamilton Woolen Co., Southbridge, Mass.
- Varnum, Percy Elwyn, VI, 1908-09.** Died Dec. 9, 1918.
- Vinal, Willis Richardson, II, 1907-10.** Shipbuilder, Atlantic Coast Co., Warren, Me.

- Wainwright, Cecil Wilson, I, 1897-98. Stonewall, Miss.
- Walen, Ernest Dean, VI, '14 (B.T.E.). Associate Physicist, Chief of Textile Section, Bureau of Standards, Washington, D. C.
- Walker, Alfred Schuyler, II, '11 (D). Overseer, American Felt Co., Picton, N. J.
- Walker, Anna Gertrude, IIb, '03 (C). See Pradel, Mrs. Alois J.
- Walker, William, Jr., II, 1904-06. Superintendent, Ottaquechee Woolen Co., Evarts, Vt.
- Wallace, John Carl, III, 1913-14. Lowell, Mass., R. F. D. No. 1.
- Walsh, Martin Francis, Jr., IV, 1909-11. 226 Water St., Fitchburg, Mass.
- Ward, Herbert Haskins, II, 1909-12. Gilbertville, Mass.
- Ware, Carl Edward, I, 1910-13. Peabody, Mass.
- Warren, Philip Hamilton, II, '05 (D). Superintendent, Hopeville Mfg. Co., Worcester, Mass.
- Washburn, Frederic Albert, I, 1911-12. Clothing Salesman, Washburn Bros. Co., 785 Washington St., Boston, Mass.
- Waterhouse, Richard Edgar, Jr., II, 1910-11. Centreville, R. I. See Service Record.
- Waterman, Andrew Searles, I, 1909-10. Warren, R. I.
- Watson, William, III, '11 (D). Real Estate Broker, Frank E. Watson, Haverhill, Mass.
- Webb, Frank Herbert, IV, '04 (D). Chemist, Washington Mills, Lawrence, Mass.
- Webber, Arthur Hammond, IV, '01 (D). Chemist, Melville Color Co., 93 High St., Boston, Mass.
- Webber, Marcus Bernard, VI, 1906-09. With Athol Gas and Electric Co., Boston, Mass.
- Webster, Joseph Albert, VI, 1916-17. 268 Main St., Ward Hill, Mass. See Service Record.
- Webster, Natt Hazen, IV, 1906-07. 42 Thorndike St., Lawrence, Mass.
- Weeks, Harry Forest, II, 1909-12. 72 Granville Ave., Malden, Mass.
- Weeks, Lauris Atlee, III, 1905-08. Rochester, N. H.
- Weinberger, Isidor, IV, 1910-11. 52 Webster St., East Somerville, Mass.
- Weinz, William Elliot, IV, '08 (D). With Essex Aniline Works, Inc., 39 Oliver St., Boston, Mass.
- Welch, George Cogswell, I, 1907-10. Stoughton, Mass.
- Wellman, Harvey Elijah, IV, 1915-16. 92 President Ave., Providence, R. I. See Service Record.
- Wells, Frank Hartley, VI, 1912-14. 3 Leighton Ave., Clinton, Mass.
- Westcott, Charles Asa, I, 1906-09. With Everett Paper Box Co., Everett, Mass.
- Weston, Stewart Downes, IV, 1899-1900. 182 Adelaide Ave., Providence, R. I.
- Wheeler, Wendell Waldo, IIb, 1906-07. Assistant Paymaster, Locks and Canals, Lowell, Mass.
- Wheelock, Stanley Herbert, II, '05 (D). Superintendent and Assistant Treasurer, Stanley Woolen Co., Uxbridge, Mass.
- Whelan, Francis Thomas, III, 1906-08. 24 Barclay St., Lowell, Mass. See Service Record.
- Whipple, Raymond Graham, IV, 1907-08. With Sullivan Machine Works, Claremont, N. H.
- Whirley, John J. M., I, 1903-04. 10 Main St., Auburn, Me.
- Whitaker, Harriet Bancroft, IIb, 1899-1900. See Kimball, Mrs.
- Whitcomb, Roscoe Myron, IV, '10 (D). Pharmacist, R. M. Whitcomb & Co., Ashland, N. H.
- White, Alice Leslie, IIb, 1908-09. See Alling, Mrs. Marshall L.
- White, Charles Burnham, II, 1906-07. 162 North Main St., Andover, Mass.
- White, Edwin Holt, 1900-01. Deceased.
- White, Harold Justin, IV, 1915-17. Shrewsbury, Mass. See Service Record.

- White, Harold Maurice, II, 1915-16.** Estimator and Draftsman, Young Bros. Co., 313 Franklin St., Detroit, Mich.
- White, Howard Arthur, VI, 1908-09.** Collections Teller, Safety Fund National Bank, Fitchburg, Mass.
- White, Philip James, IV, 1915-17.** 131 Grove St., Lowell, Mass. See Service Record.
- White, Royal Philip, II, '04 (D).** Agent, Stirling Mills, Lowell, Mass.
- White, William Dexter, I, 1897-98.** Hydraulic Engineer, Holyoke Machine Co., Worcester, Mass.
- Whitehill, Warren Hall, IV, '12 (D).** Groton, Mass. See Service Record.
- Whitney, Austin Porter, I, 1907-09.** Factory Manager, Wachusett Shirt Co., Leominster, Mass.
- Whittier, Sidney Boyden, VI, 1916-18.** Assistant Superintendent, Whittier Mills Co., Chattahoochee, Ga.
- Whittier, Sumner Clarence, IV, 1909-12.** 64 Salem St., Reading, Mass. See Service Record.
- Wiggin, Leon Marshall, II, 1904-06.** Head Designer, U. S. Worsted Co., Uswoco Mills, Lawrence, Mass.
- Wightman, William Henry, IV, '06 (D).** Salesman, Aniline Dyes and Chemicals, Inc., Boston, Mass.
- Wilber, Herbert Hewes, VI, 1907-08.** Supervisor, Trade School, Torrington, Conn.
- Wiley, Raymund, IV, 1908-09.**
- Williams, Harrison Morton, II, 1908-11.** 61 Columbus Ave., Haverhill, Mass.
- Williams, Roy Pease, III, 1906-08.** 83 Magnolia Ter., Springfield, Mass.
- Wilson, John Sigmund, II, '03 (D).** Deceased.
- Wilson, Ralph Albertus, VI, 1904-07.** 376 Wilder St., Lowell, Mass.
- Wilson, Walter Ernest Hudson, I, '04 (C).** Deceased.
- Wing, Charles True, III, '02 (D).** Inspector, Quartermaster's Corps, Plymouth, Mass.
- Wingate, William Henry, IV, '08 (D).** Printing Foreman, Sidney Blumenthal & Co., Shelton, Conn.
- Winkler, Adolph Julius, IV, 1916-17.** Student, Polytechnic Institute, Brooklyn, N. Y.
- Winn, Charles Lawrence, II, 1915-17.** 808 Commonwealth Ave., Newton Center, Mass. See Service Record.
- Winn, Lyman Earle, VI, 1906-07.** 27 Jefferson St., Haverhill, Mass.
- Winslow, George Howard, III, 1907-09.** Salesman, American Woolen Products Co., 4th Ave. and 18th St., New York City.
- Winslow, Walter Clark, IV, 1905-08.** Ayer, Mass.
- Wise, George Florry, IV, 1909-10.** New England Telephone and Telegraph Co., Fitchburg, Mass.
- Wise, Paul Tower, II, '01 (D).** Vice President and General Manager, Chelsea Fibre Mills, Brooklyn, N. Y.
- Wiswall, Frank Trowbridge, II, 1909-11.** 107 Coolidge St., Lawrence, Mass. See Service Record.
- Wood, Ernest Hadley, IV, '11 (D).** Instructor, Department of Biological Chemistry, Marquette School of Medicine, Milwaukee, Wis.
- Wood, Herbert Charles, I, '06 (D).** Assistant Superintendent, Union Wadding Co., Pawtucket, R. I.
- Wood, James Carleton, IV, '09 (D).** Chemist and Fabric Expert, The Brunswick-Balke-Collender Co., Muskegon, Mich.
- Wood, John Mayhew, VI, 1916-18.** With Manville Co., Woonsocket, R. I.
- Wood, Lawrence Burnham, IV, '17 (B.T.C.).** Industrial Engineer, Sayles Finishing Plants, Phillipsdale, R. I.
- Woodcock, Eugene Close, II, '07 (D).** Manufacturing Superintendent, Chelsea Fibre Mills, Brooklyn, N. Y.

- Woodies, Ida Alberta, IIb, '00 (C).** Reconstruction Aid, Medical Department, Military Hospital No. 3, Colonia, N. J.
- Woodman, Harry Lincoln, I, '02 (C).** Draftsman, Saco-Lowell Shops, Lowell, Mass.
- Woodruff, Charles Beauregarde, I, '06 (C).** Buyer, Sharp & Co., Inc., Birmingham, Ala.
- Woods, George William, IV, 1913-16.** Groton, Mass.
- Woods, Harvey Allen, VI, 1912-15.** Groton, Mass. See Service Record.
- Woods, Thomas Joseph, II, 1911-12.**
- Wright, Arthur Gerbbert, III, 1901-02.** Billerica, Mass.
- Wright, Dorothy Quincy, IIb, 1910-11.** 33 Fairview St., Lowell, Mass.
- Wright, Edward, Jr., II, '05 (C).** 505 Washington St., Dedham, Mass. See Service Record.
- Wright, Mrs. Howard H. P. (Peirce, Florence E.), IV, 1900-01.** 18 Harrison St., Winchester, Mass.
- Yamanobe, Giyu, II, 1907-08.** Mito, Tokio, Japan.
- Yang, Sih-zung, I, 1915-16.** Shanghai, China.
- Yavner, Harry, II, '12 (D).** Inspector, Quartermaster's Corps, Boston, Mass.
- Young, Andrew, IV, 1917-18.** 114 Union Ave., Irvington, N. J.
- Youngman, Gardner Mahaffey, II, 1899-1902.**
- Zia, Zanche Zungtsoo, I, 1914-15.** A61 Szechuan Rd., Shanghai, China.
- Zimmermann, Alexander Sisskind, VI, 1914-17.** Great Neck, L. I.
- Zobel, Carl Julius, II, 1909-11.** Cor. Blackburn and Blossom Sts., Ripon, Wis. See Service Record.

MILITARY AND NAVAL SERVICE RECORD.

The following list of men in the military and naval service is obviously not complete. It is desired to have a permanent record of all Lowell Textile School men who are or who have been in the service. The school has made an earnest endeavor to learn of all who have been in service, but the fact is appreciated that there are undoubtedly others whose record has not been reported to the school. It therefore is urged that all past students and friends will co-operate with us by sending any corrections or additions that should be made.

- Abbot, Edward M.**, '04. Field Artillery, Commission Officers' Training Camp.
- Abbott, Fred A.**, '14. Ensign, U. S. Navy.
- Ackley, Eugene R.**, '19. Field Artillery, Battery F, 102d Regiment, France.
- Adams, Arnold B.**, '14. Musician, 76th Field Artillery Band.
- Alliot, Eric**, '15. Lieutenant, U. S. Naval Air Service, Miami, Fla.
- Anagnos, Demetrius**, '10. Infantry, Headquarters Troop, 20th Division, Camp Sevier, S. C.
- Anderson, William**, '10. Ensign, U. S. N. R. F.
- Andrews, Freeman W.**, '13. Second Lieutenant, Motor Transport Corps No. 351, Ft. Sill, Okla.
- Ashworth, Ralph W.**, '17. Field Artillery, Battery D, 3d Regiment, F. A. R. D., Camp Jackson, Columbia, S. C.
- Baker, Perley D.**, '20. Chemical Warfare Service, Rosenwasser Bros.
- Ballard, Albert P.**, '14. Sergeant, Co. C, 101st Engineers, France.
- Barnes, Hammond**, '16. Lieutenant, B Co., 39th Infantry, A. E. F.
- Berg, Ralph A.**, '20. Radio Operator, U. S. N. R. F., Bar Harbor, Me.
- Berquest, Hugh G.**, '18. Second Lieutenant, Aviation.
- Berry, Wilbur F.**, '17. Lieutenant, Field Artillery, Battery F, 102d Regiment, France.
- Bigelow, Prescott F.**, '12. First Lieutenant, Ordnance Department. (Died Oct. 14, 1918.)
- Bissonnette, Leo A.**, '19. Corporal, 4th Pioneer Band, A. P. O. 762, France.
- Blake, Parker G.**, '14. Second Lieutenant, Quartermaster's Corps, Boston, Mass.
- Blood, Prentice W.**, '13. Aviation.
- Bradley, Raymond F.**, '14. Second Lieutenant, Air Service Aeronautics.
- Brady, John T.**, '10. Sergeant, Detachment No. 1, Air Service Air-craft Production, Washington, D. C.
- Brainerd, Walter E.**, '18. Ensign, U. S. Navy.
- Branson, Frank L.**, '12. Ensign, U. S. N. R. F. C.
- Brearley, Earl B.**, '16. Seaman, U. S. Navy, U. S. S. "Machigonne II."
- Brower, Abram V.**, '02. Captain, Quartermaster's Corps, Zone Supply Office, New York City.
- Brown, Russell L.**, '19. Sergeant, Field Artillery, Battery F, A. E. F. (Cited for bravery.)
- Burke, Henry B.**, '12. Sergeant, Quartermaster's Enlisted Reserve Corps, 507th Laundry Co., Base Hospital No. 8, A. E. F. in France.
- Byers, George E.**, '16. Corporal, Artillery.
- Canty, Timothy C.**, '10. Lieutenant, Ordnance Department, Aircraft Armament Section, A. P. O. 702, A. E. F.
- Church, Charles R.**, '06. Camp Physical Director, Camp Kearney, San Diego, Cal.

- Church, Harold P., '13. Private, Field Artillery, Battery A.
- Clark, Earl W., '18. Chemical Warfare Service, Washington, D. C.
- Cleary, Charles J., '13. First Lieutenant, Aviation Section, Signal Corps.
- Cogswell, Wilder D., '12. Private, 17th Regiment, Field Artillery, Battery B, A. E. F.
- Collingwood, Hueston, '09. Second Lieutenant, 117th Regiment Field Artillery, Battery D, 56th Brigade, A. E. F.
- Comey, Francis W., '14. Corporal, Truck Co. D, 101st Supply Train, 26th Division, A. E. F., France.
- Conant, Richard G., '12. First Lieutenant, Field Artillery, A. E. F., France.
- Cone, Morris H., '18. Lieutenant (Junior Grade), Construction Corps, U. S. N. R. F., Charlestown, Mass.
- Conway, Coleman, Jr., '17. Captain, 119th Infantry, A. E. F.
- Cox, James W., Jr., '16. First Lieutenant, Quartermaster's Corps (Textile Division), A. P. O. 702, France.
- Crippen, Harold E., '18. Infantry, Camp Devens, Massachusetts.
- Cudlip, Carroll M., '14. Captain, Canadian Siege Battery. (Went overseas April, 1915, and was later sent to the Balkan States with Battery of Veterans.)
- Cummings, Edward S., '16. Ensign, U. S. N. R. F.
- Dalton, John, Jr., '12. Chief Gunner's Mate, U. S. Navy.
- Darrin, Erwin N., '17. Ensign, Mine Force, U. S. Navy, U. S. S. "Housatonic."
- Davieau, Alfred E., '16. First Class Private, Aviation Section, Signal Corps, Bureau Construction and Repairs, Navy Department, Washington, D. C.
- Davis, Harold E., '18. Dartmouth Training Camp. (Discharged for physical disability.)
- Dennett, Mahlon W., '18. Corporal, Field Artillery, Battery F, 102d Regiment. (Died in France Aug. 10, 1918, from effects of wounds received in action July 24.)
- Desmarais, Albert E., '21. U. S. N. R. F.
- Dexter, George O., Jr., '20. Corporal, B Co., 147th Machine Gun Brigade, A. P. O. 727, A. E. F.
- Dickson, Earle E., '15. Private, Medical Corps, 310th Ambulance Co.
- Dimock, Dwight L., '18. Corporal, Co. F, 116th Engineers, A. P. O. 702, A. E. F.
- Douglas, Walter S., '19. Bugler, Battery F, 102d Field Artillery, A. E. F.
- Doyle, John H., '19. Ordnance Sergeant, Ordnance Department, Ordnance, Maintenance and Repair School, Camp Raritan, N. J.
- Eaton, Ralph C., '19. Private, Service Co. No. 4, Camp Johnston, Jacksonville, Fla.
- Echmalian, John G., '16. Private, Field Artillery, Central Officers' Training School.
- Edgecomb, Fred H., '14. Corporal, Ordnance Department, New York City.
- Ehrenfried, Jacob B., '07. Sergeant, Headquarters Co., 29th Artillery, Ft. Williams, Me.
- Elliot, Gordon B., '12. First Lieutenant, Ordnance Department, Washington, D. C.
- Enloe, Winfred P., '20. Top Sergeant, Aviation, 26th Photographic Section, A. E. F.
- Farley, Mortimer T., '18. Chemical Warfare Service, Gas Defence Plant, Long Island City, N. Y.
- Farnsworth, Harold V., '16. Ensign, Pay Corps, U. S. N. R., Navy Yard, Charleston, S. C.
- Faulkner, Richard M., '12. Second Lieutenant, R. M. A., Air Service.
- Fendel, Frank, '18. U. S. N. R. F.
- Fisher, Russell T., '14. 27th Division Ammunition Train.

- Fitzgerald, John F., '18.** Machinist's Mate (Second Class), U. S. N. R. F.
- Fitzpatrick, William J., '09.** Corporal, A. E. F., France.
- Fletcher, Roland H., '10.** Sergeant, 57th Aero Construction Squadron, Aviation, A. E. F.
- Flynn, Thomas P., '11.** Captain, Heavy Field Artillery, A. E. F., France.
- Folkins, Ralph M., '16.** Top Sergeant and Assistant Band Leader 101st U. S. Engineers Band, A. E. F.
- Forsaith, Ralph A., '16.** Chief Machinist's Mate, U. S. Navy.
- Fortin, Adelard J., '19.** Second Lieutenant, Field Artillery, Camp Zachary Taylor, Kentucky.
- Frary, Stanley H., '18.** Sergeant, Infantry, 2d Oversea Casual Detachment, Camp Devens, Massachusetts.
- Frye, Whitney M., '15.** Signal Corps.
- Garmon, Joseph P., '16.** Warrant Machinist, U. S. N. R.
- Gerrish, Henry K., '16.** Lieutenant, Camp Zachary Taylor, Kentucky.
- Girard, Harry N., '09.** Service in France. (Branch of service not known.)
- Goodacre, Kenneth R., '19.** Second Lieutenant, Royal Air Force.
- Goodell, J. Butler, '15.** U. S. Army. (Branch of service unknown.)
- Goodwin, James S., '11.** First Lieutenant, Senior Dental Surgeon, Camp Morrison, Virginia.
- Gottesman, Louis, '18.** Corporal, U. S. Marine Corps, N. C. G. Detachment.
- Greer, John H., Jr., '14.** 15th Co., 4th Battalion, 160th Depot Brigade, Camp Custer, Battle Creek, Mich.
- Grout, Walter T., '18.** Private, Battery F, Field Artillery, 102d Regiment, 26th Division, A. E. F., France.
- Gurney, Wallace L., '20.** Bugler, Battery F, Field Artillery, 102d Regiment, A. E. F., France.
- Hadley, Richard F., '19.** Corporal, Battery F, 102d Regiment, Field Artillery, A. E. F., France. (Croix de Guerre.)
- Hadley, Roger C., '19.** 9th Regiment, Ambulance Corps, A. E. F., France.
- Hale, Elliott K., '10.** Sergeant, Headquarters Co., 103d Infantry, 26th Division, A. E. F., France.
- Hamilton, Robert M., '14.** First Lieutenant, Quartermaster's Corps, Base Hospital No. 68, A. P. O. 780, France.
- Hanlon, David A., '09.** Sergeant, Engineers, S. E. O. Base Section No. 1, A. P. O. 701, A. E. F.
- Harding, Harry O., '13.** Captain, Canadian Army Dental Corps, Camp Witley, Surrey Co., Eng.
- Harding, Richard B., '13.** Captain, 74th Infantry, Camp Devens, Massachusetts.
- Harris, Laurence, R., '16.** First Class Private, Courier Motor Despatch, Motorcycle Co. 305, A. P. O. 706, A. E. F., France.
- Hart, Arthur N., '18.** Top Sergeant, Chemical Warfare Service, Lakeside Hospital, Cleveland, Ohio.
- Hartshorn, George T., '12.** Medical Department, 4th Anti-Aircraft Machine Gun Battalion, A. P. O. 714, A. E. F.
- Harvey, Wendell P., '15.** U. S. Navy.
- Haskell, Spencer H., '07.** Lieutenant, Aviation Signal Corps.
- Hassett, Paul J., '12.** Second Lieutenant, Quartermaster's Corps, Atlanta, Ga.
- Hastings, Warren R., '12.** Ensign, U. S. Navy, U. S. S. "Cumberland," Norfolk, Va.
- Heiser, Jerome M., '18.** Second Lieutenant, 104th Infantry. (Six months' service in France, and later detailed as instructor in trench warfare, Camp Devens, Massachusetts.)

- Heney, Fred C., '16.** First Class Private, Medical Department, 302d Machine Gun Co., C.
- Henry Rodman C., '19.** Private, Coast Artillery, Fort Heath, Winthrop, Mass.
- Hickey, John R., '20.** Machinist's Mate (First Class), U. S. N. R. F., U. S. Naval Academy, Experiment Station, Annapolis, Md.
- Hildreth, Harold W., '07.** Corporal, 28th Engineers.
- Hinchliff, Ralph, '13.** Sergeant, Infantry.
- Hockmeyer, Clive E., '18.** Gunner, Canadian Siege Battery, B. E. F., France.
- Holden, John S., '19.** Second Lieutenant, Field Artillery, A. P. O. 778, A. E. F., France.
- Holt, Justin G., '15.** Lieutenant, Quartermaster's Corps, Boston, Mass.
- Hood, George C., '19.** 72d Photographic Section, American Air Service, A. E. F.
- Horton, Chester T., '14.** Corporal, Aviation Corps, Buffalo, N. Y.
- Hosley, Carlton R., '19.** Sergeant, Battery F, 102d Field Artillery, A. E. F.
(Cited for bravery.)
- Huber, Fred G., '19.** Infantry, Camp Devens, Massachusetts.
- Hundley, J. Winslow, '11.** Second Lieutenant, Quartermaster's Corps.
- Hurld, Henry M., '14.** U. S. Navy, U. S. S. "Pocahontas."
- Huse, Charles H., '19.** Warrant Machinist, U. S. Navy.
- Hutchinson, Myron R., '13.** Sergeant, Sanitary Corps, 102d Field Artillery, A. E. F., France.
- Irvine, James A., '17.** Second Lieutenant, Engineers, O. R. C.
- Jefferson, Roswell C., '11.** Regimental Sergeant, 301st Infantry, U. S. N. A.
- Jelleme, William O., '10.** Second Lieutenant, F. A. R. C.
- Johnson, Arthur K., '13.** Private, First Class, Medical Department, Base Hospital, Camp Devens, Massachusetts.
- Johnson, George H., '18.** Battery F, 102d Field Artillery, A. E. F.
- Jones, Nathaniel E., '19.** Ensign, Naval Aviation, U. S. N. R. F., Pensacola, Fla.
- Kaatze, Julius, '19.** Engineers Corps, Ft. Slocum, New York.
- Karanfilian, John H., '21.** 310th Cavalry, Ft. Ethan Allen, Vermont.
- Katten, Myron, '13.** Sergeant, Infantry, 13th Transportation Co., 154th D. B., Camp Meade, Maryland.
- Kelsey, Oscar E., '12.** Sergeant of Ordnance, 14th M. O. R. S., Camp Custer, Michigan.
- Kennedy, Edmund T., '17.** First Lieutenant, 53d Infantry Regiment.
- Keough, Wesley L., '10.** Second Lieutenant, Air Service, R. M. A.
- Kilduff, Frank B., '21.** Machinist's Mate, U. S. N. F. C., Naval Air Station, Key West, Fla.
- Kimball, Ralph H., '13.** Field Artillery. (Died Oct. 7, 1918.)
- Lamb, Horace E., '14.** Yeoman, U. S. N. R. F.
- Lane, Oliver F., '15.** Ensign, U. S. N. R. F.
- Larratt, John F., '19.** Private, Battery F, 102d Field Artillery, A. E. F., France.
- Laurin, Eric T. L., '19.** Battery F, 102d Field Artillery, A. E. F.
- Lawrence, Harold E., '17.** Sergeant, Field Artillery, Headquarters Co., 102d Field Artillery, A. E. F.
- Lawson, Edward R., '14.** Corporal, Battery F, 102d Field Artillery, A. E. F.
- Leffingwell, Raymond D., '13.** Headquarters Detachment Transportation Corps, 5th Grand Division, A. P. O. 716, A. E. F., France.
- Leonard, Bryan, '19.** Battery F, 102d Field Artillery, A. E. F.
- Levison, Abner S., '21.** Corporal, Infantry C. O. T. C.
- Lewis, Frank H., '20.** Radio Operator, U. S. Navy, U. S. S. "Arizona."

- Lewis, Walter S., '05.** Captain, Ordnance Department, Engineering Division, Washington, D. C.
- Leland, Thomas W., '03.** Sergeant, Aviation Section, Signal Corps.
- Libbee, George C., '17.** U. S. Navy.
- Longbottom, Parker W., '19.** Supply Co., Quartermaster's Corps, A. P. O. 707, A. E. F.
- Love, George J., '18.** U. S. Navy.
- Lowell, James E., '08.** Press Division, General Headquarters, A. E. F. With Army of Occupation in Germany.
- Lynch, Timothy H., '10.** Second Lieutenant, Co. I, 143d U. S. Infantry, A. E. F.
- McCann, Henry M., '18.** First Class Private, Medical Corps, U. S. Base Hospital No. 19, A. P. O. 781, A. E. F., France.
- McCarthy, Joseph H., '17.** First Class Engineman, U. S. Navy, U. S. S. "W. L. Steed."
- McCarthy, Michael J., '13.** Sergeant, Intelligence Department, Headquarters 5th Division, A. E. F.
- McCleary, Samuel W., '12.** U. S. Infantry.
- McClellan, Charles W., '19.** Lieutenant, Air Service.
- McCool, Frank L., '10.** Lieutenant, 101st Headquarters Train and Military Police, A. E. F.; later First Lieutenant with Chemical Warfare Service.
- McCreery, Robert W., '14.** Second Lieutenant, U. S. A. R. C.
- Macdonald, Hector G., '18.** Chemical Warfare Service.
- McGowan, William J., Jr., '11.** Coast Artillery, Fort Andrews, Massachusetts.
- Madden, Francis P., '13.** Ensign, U. S. N. R. F., U. S. S. "Sierra."
- Magee, Lowell F., '13.** Chief Army Field Clerk, U. S. Army, Chaumont, France.
- Maguire, Daniel H., Jr., '14.** Ordnance Department, Instructor, Camp Raritan, Metuchen, N. J.
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- Mather, Harold T., '13.** First Lieutenant, Coast Artillery Corps, U. S. R.
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- Matthews, Elmer C., '17.** Second Lieutenant, Field Artillery, A. P. O. 718, A. E. F.
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- Messer, Ralph W., '14.** Military Police, 5th Corps, A. P. O. 769, A. E. F., France.
- Messer, Raymond B., '18.** Lieutenant, Signal Officers' Reserve Corps. (Died in France, February, 1919.)
- Middleton, James A., '11.** Second Lieutenant, Machine Gun Co., Camp Hancock, Ga.
- Miller, Severn A., '14.** First Lieutenant, 319th Infantry, A. E. F., France.
- Montgomery, Charles W., '19.** Co. 3, First Battalion, Q. C. O. T. S.
- Moore, Charles G., '21.** Seaman, Second Class, U. S. N. R. F.
- Moore, Karl R., '11.** Sergeant, Chemical Warfare Service, A. E. F.
- Moore, Otis R., '19.** Regimental Supply Sergeant, Supply Co., First Army Headquarters Regiment, A. E. F., A. P. O. 716, France. (U. S. Distinguished Service Cross.)
- Moore, William J., '17.** Officers' Material School, Merchant Marine Barracks, Newport, R. I.
- Moorhouse, Dan W., '19.** Battery F, 102d Field Artillery, A. E. F.
- Morin, Joseph P., '13.** Mechanic, Battery F, 102d Field Artillery, A. E. F.

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- Morse, Allyn, J.**, '19. Corporal, Chemical Warfare Service, Edgewood Arsenal, Edgewood, Md.
- Murphy, Raymond V.**, '09. Lieutenant, Quartermaster's Corps, Rest Camp 3, A. P. O. 721, Dijon, France.
- Murray, Thomas H.**, '09. Second Lieutenant, Air Service, Aircraft Production, Vancouver Barracks, Washington.
- Newell, Herbert M.**, '14. Private, Infantry.
- O'Brien, Philip F.**, '15. Junior Officer, U. S. Merchant Marine.
- O'Brien, Walter A., Jr.**, '13. Corporal, Anti-Aircraft, U. S. A.
- O'Sullivan, Bartholomew B.**, '08. Naval Aviation, U. S. Naval Air Station, Dirigible Section, Pensacola, Fla.
- Palais, Samuel**, '18. Seaman, Second Class, U. S. N. R. F.
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- Peabody, Roger M.**, '16. Second Lieutenant, Co. H, 74th Infantry, Camp Devens, Massachusetts.
- Pearl, Lloyd M.**, '14. Second Lieutenant, Quartermaster's Corps, A. P. O. 909, A. E. F.
- Peck, Carroll W.**, '13. Second Lieutenant, Air Service M. A.
- Peckham, Harold L.**, '20. Co. C, 8th Separate Battalion, W. S. M. C., A. E. F.
- Peckham, Stockman C.**, '20. U. S. Army Ambulance Corps, A. E. F., France.
(Cited for bravery.)
- Perlman, Samuel**, '17. Corporal, Chemical Warfare Service and Ordnance Department.
- Plaisted, Webster**, '18. Chief Machinist's Mate, U. S. Navy, U. S. Naval Hospital, Pelham Bay Park, New York.
- Plummer, Stanley R.**, '18. Second Mate, First Class, N. R. F. C., U. S. Naval Air Station, Pensacola, Fla.
- Potter, Robert C.**, '16. Sergeant, 317th Field Signal Battalion, A. E. F.
- Pottinger, James G.**, '12. Sergeant, Quartermaster's Corps, A. P. O. 711, A. E. F.
- Powers, Walter W.**, '17. Battery F, 102d Field Artillery, A. E. F.
- Prescott, Walker F.**, '09. Sergeant, Chemical Warfare Service, Washington, D. C.
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- Ray, James F.**, '11. Sergeant, Medical Department, U. S. Base Hospital No. 8, A. E. F.
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- Richardson, George O.**, '16. Second Lieutenant, Chemical Warfare Service, Washington, D. C.
- Richmond, Lysander**, '15. Seaman, U. S. N. R. F.
- Rider, William J.**, '19. U. S. Army Ambulance Service.
- Riggs, Homer C.**, '17. Sergeant, Motor Transport Corps, 12th Administrative Co., A. P. O. 717, A. E. F.
- Ripley, George K.**, '17. Ordnance Department, Aberdeen Proving Grounds.
- Roberts, Herbert C.**, '20. Private, First Class, 51st Brigade Headquarters Co., and later Instructor, Chemical Warfare Service, A. P. O. 717, A. E. F.
- Roberts, Roscoe O.**, '17. Second Lieutenant, Aviation, Selfridge Field, Mt. Clemens, Mich.
- Robertson, George O.**, '14. First Lieutenant, Quartermaster's Department, Intermediate Section, A. P. O. 708, Nevers, France.

- Rogers, Miles E., '12. Private, Camp Devens, Massachusetts.
- Ross, Edward S., '18. Co. F, 101st U. S. Engineers, 26th Division, A. E. F.
- Rowell, John I., '17. Ensign, U. S. Navy, Newport, R. I.
- Rundlett, Arnold D., '12. Quartermaster's Corps, Camp Upton, New York.
- Ryder, Howard D., '13. Machine Gun Officers' Training School, Camp Hancock, Ga.
- Sanborn, Elmer E., '18. Machine Gun Co., 103d Regiment, 26th Division, A. E. F.
- Sayward, Ralph K., '12. 35th Regiment, Co. I Engineers, A. E. F., France.
- Schmiedel, Alfred G., '18. Camouflage Service.
- Schuster, Raymond H., '19. 5th Regiment.
- Scoboria, Glendon A., '20. Heavy Artillery, Battery C, Tractor Artillery Replacement Battery, American First Army, A. P. O. 913, A. E. F.
- Scott, George W., '16. Senior Medical Office, U. S. N. R., Man's Camp, Pelham Bay, New York.
- Selden, James K., '18. Second Lieutenant, Aviation Service.
- Shaber, Hyman J., '17. First Class Private, Signal Corps, Aero Division, 7th Aero Squadron, Canal Zone, Panama.
- Shea, Francis J., '12. Second Lieutenant, 74th Infantry, Camp Devens, Massachusetts.
- Shedd, Howard P., '13. Chemical Warfare Service.
- Shepard, Howell F., '18. First Class Private, U. S. Army Ambulance Service Medical Corps, A. E. F. (Cited for bravery.)
- Shuttleworth, Howard L., '20. Corporal, Headquarters Co., 17th U. S. Field Artillery, A. E. F.
- Signor, Clarence E., '11. Private, First Class, Chemical Warfare Service, Edgewood Arsenal, Edgewood, Md.
- Sill, Walter G., '07. Motor Transport Corps, Washington, D. C.
- Simpson, Kenneth M., '17. Medical Section, Ambulance Unit, Convois Automobiles, S. S. U. 539, A. E. F., France. (Cited for bravery.)
- Sjostrom, Carl G. V., Jr., '17. Battery F, 102d Field Artillery, A. E. F., France.
- Smith, Byron D., '16. Bugler, Battery D, 4th Anti-Aircraft Battalion, Coast Artillery Corps, A. E. F.
- Smith, Doane W., '10. Seaman, U. S. N. R. F., and later Officers' Training School, Pelham Bay Park, New York.
- Smith, Frank L., '12. First Lieutenant, 14th Field Artillery, Brigade Headquarters, Camp Custer, Michigan.
- Smith, Malcolm H., '17. Radio Sergeant, 61st Artillery, Coast Artillery Corps, A. E. F., France.
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- Stevens, Howard A., '12. Second Lieutenant, Aviation.
- Stiegler, Harold W., '18. Chemical Warfare Service, Washington, D. C.
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- Sturtevant, Herbert A., '15. Lieutenant, Dental Surgeon, U. S. Navy, U. S. S. "Bridgeport."
- Sullivan, Joseph I., '17. Lieutenant, Aviation, Balloon School "A", Arcadia, Cal.
- Summersby, George W., '11. Lieutenant, Naval Aviation, U. S. N. R. F.
- Summersby, William C., '15. Sergeant, Co. I, 346th Infantry, A. E. F.
- Sunbury, Herbert E., '17. Corporal, Engineers Corps, Camp Sheridan, Alabama.
- Sydemann, William R., '18. Private, Quartermaster's Corps, Camp A. A. Humphreys, Virginia.

- Tenney, Frank F., '15.** Flying Instructor, U. S. Naval Aviation Detachment, Toronto, Can.
- Thayer, Frank L., '19.** Sergeant, Battery F, 102d Field Artillery, A. E. F.
- Todd, Walter E., '18.** Officers' Material School, U. S. N. R. F.
- Toshach, Reginald A., '11.** Lieutenant, Field Artillery.
- Townsend, James G., '16.** Second Lieutenant, Field Artillery.
- Treadway, Wolcott W., '15.** Lieutenant. (Died from effects of wounds received in action.)
- Tyler, Lauriston W., '16.** Medical Corps, Evacuation Hospital No. 6, A. E. F., France.
- Valpey, Frank D. R., '09.** Corporal, Battery B, 319th Heavy Field Artillery.
- Waterhouse, Richard E., '13.** Aviation Service, American Red Cross Military Hospital No. 4, Mossley Hill, Liverpool, Eng.
- Watson, William, '11.** Second Lieutenant, Air Service, S. C.
- Webster, Joseph A., '20.** Corporal, Battery F, 102d Regiment Field Artillery, A. E. F.
- Welch, George C., '10.** Captain, Quartermaster's Corps, Washington, D. C.
- Wellman, Harvey E., '17.** Pharmacist's Mate, Third Class, U. S. N. R. Hospital Unit No. 4.
- Whelan, Francis T., '09.** Private, Co. F, 59th Regiment, 4th Division, France.
- White, Harold J., '19.** Private, Coast Artillery, Fort Williams, Maine.
- White, Philip J., '19.** Battery F, 102d Field Artillery, A. E. F., France.
- Whitney, Sidney B., '20.** Aviation Service, Kelley Field No. 1, San Antonio, Tex.
- Whitehill, Warren H., '12.** Chemical Warfare Service.
- Whittier, Sumner C., '12.** Medical Corps, Camp Devens, Massachusetts.
- Winn, Charles L., '18.** Lieutenant (Junior Grade), U. S. Navy, U. S. S. "George Washington."
- Wiswall, Frank T., '12.** First Sergeant, 12th Field Artillery, Army Candidates School, A. P. O. 718, France.
- Wood, John M., '20.** Sergeant, Field Artillery, Central Officers' Training Camp, Camp Zachary Taylor, Kentucky.
- Woods, Harvey A., '15.** Private, 116th Engineers, Co. M, France.
- Wright, Edward, '05.** Captain, Sanitary Corps, Camp Benning, Columbus, Ga.
- Zobel, Carl J., '12.** Lieutenant, Fort Dodge, Iowa.



General View of School, Merrimack River.

BULLETIN
OF THE
Lowell Textile School
LOWELL, MASS.

Issued Quarterly

1919-1920

Entered August 26, 1902, at Lowell, Mass., as second class matter
under Act of Congress of July 16, 1894
Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3,
1917, authorized October 21, 1918.

Moody Street and Colonial Avenue

BOSTON
WRIGHT & POTTER PRINTING CO., STATE PRINTERS
32 DERNE STREET
1919

... 1919 ...

JANUARY.							JULY.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
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FEBRUARY.							AUGUST.						
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MARCH.							SEPTEMBER.						
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APRIL.							OCTOBER.						
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MAY.							NOVEMBER.						
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JUNE.							DECEMBER.						
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...

... 1920 ...

JANUARY.							JULY.						
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FEBRUARY.							AUGUST.						
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MARCH.							SEPTEMBER.						
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7	8	9	10	11	12	13	5	6	7	8	9	10	11
14	15	16	17	18	19	20	12	13	14	15	16	17	18
21	22	23	24	25	26	27	19	20	21	22	23	24	25
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APRIL.							OCTOBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
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4	5	6	7	8	9	10	3	4	5	6	7	8	9
11	12	13	14	15	16	17	10	11	12	13	14	15	16
18	19	20	21	22	23	24	17	18	19	20	21	22	23
25	26	27	28	29	30	...	24	25	26	27	28	29	30
...	31
MAY.							NOVEMBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
...	1		1	2	3	4	5
2	3	4	5	6	7	8	7	8	9	10	11	12	13
9	10	11	12	13	14	15	14	15	16	17	18	19	20
16	17	18	19	20	21	22	21	22	23	24	25	26	27
23	24	25	26	27	28	29	28	29	30
30	31
JUNE.							DECEMBER.						
S	M	T	W	T	F	S	S	M	T	W	T	F	S
...	...	1	2	3	4	5	1	2	3	4	
6	7	8	9	10	11	12	5	6	7	8	9	10	11
13	14	15	16	17	18	19	12	13	14	15	16	17	18
20	21	22	23	24	25	26	19	20	21	22	23	24	25
27	28	29	30	26	27	28	29	30	31	...
...

CALENDAR.

January — June, 1919.

January 2, Thursday,	SECOND TERM begins.
February 8, Saturday,	End of first five-week period of second term.
February 22, Saturday,	Washington's Birthday — Holiday.
March 15, Saturday,	End of second five-week period of second term.
April 14, Monday, to April 19, Saturday, inclusive.	Recess.
April 19, Saturday,	End of third five-week period of second term.
May 26, Monday,	Final examinations begin.
May 30, Friday,	Memorial Day — Holiday.
June 10, Tuesday,	Graduation.
June 18, 19, Wednesday, Thursday, 9 A.M.,	First entrance examinations.

September, 1919 — June, 1920.

September 9, 10, Tuesday, Wednesday, 9 A.M.,	Second entrance examinations.
September 22, Monday, 9 A.M.,	Re-examinations and examinations for advanced standing begin.
September 29, Monday,	DAY SCHOOL YEAR begins.
October 13, Monday,	Holiday in observance of Columbus Day.
November 1, Saturday,	End of first five-week period of first term.
November 26, Wednesday, to November 29, Saturday, inclusive.	Thanksgiving recess.
December 6, Saturday,	End of second five-week period of first term.
December 22, Monday, to January 3, Saturday, inclusive.	Christmas recess.
January 26, Monday,	Semi-annual examinations begin.
February 9, Monday,	SECOND TERM begins.
February 23, Monday,	Holiday in observance of Washington's Birthday.
March 13, Saturday,	End of first five-week period of second term.
April 17, Saturday,	End of second five-week period of second term.
April 17, Saturday, to April 20, Tuesday, inclusive.	Recess.
May 24, Monday,	Final examinations begin.
May 31, Monday,	Holiday in observance of Memorial Day.
June 4, Friday,	Graduation.
June 15, 16, Tuesday, Wednesday, 9 A.M.,	First entrance examinations.

September, 1920 — January, 1921.

September 14, 15, Tuesday, Wednesday, 9 A.M.,	Second entrance examinations.
September 20, Monday, 9 A.M.,	Re-examinations and examinations for advanced standing begin.
September 27, Monday,	DAY SCHOOL YEAR begins.
October 12, Tuesday,	Columbus Day — Holiday.
October 30, Saturday,	End of first five-week period of first term.
November 24, Wednesday, to November 27, Saturday, inclusive.	Thanksgiving recess.
December 4, Saturday,	End of second five-week period of first term.
December 23, Thursday, to January 1, Saturday, inclusive.	Christmas recess.

TRUSTEES OF THE LOWELL TEXTILE SCHOOL.

Officers.

ALEXANDER G. CUMNOCK, *Chairman.*
 ARTHUR G. POLLARD, *Vice-Chairman.* CHARLES H. EAMES, *Clerk.*

Trustees.

On the part of the Commonwealth of Massachusetts.
 Dr. PAYSON SMITH, Commissioner of Education.

On the part of the city of Lowell.
 Hon. PERRY D. THOMPSON, Mayor of Lowell.

FOR TERM ENDING JUNE 30, 1919.

WILLIAM R. MOORHOUSE, Boston, Color Chemist, Cassella Color Company, class of 1901.
 HUGH J. MOLLOY, Lowell, Superintendent of Public Schools.
 WILLIAM A. MITCHELL, Lowell, Agent, Massachusetts Cotton Mills, Boston Corporation,
 mills at Lowell.
 T. ELLIS RAMSDELL, Housatonic, Agent, Monument Mills, class of 1902.
 THOMAS T. CLARK, Assistant Manager and Treasurer, Talbot Mills, North Billerica, Mass.

FOR TERM ENDING JUNE 30, 1920.

GEORGE H. SATWARD, Winchester, Treasurer, Pemberton Company, Boston Corporation,
 mills at Lawrence.
 FREDERICK A. FLATHER, Lowell, Treasurer, Boott Mills, Boston corporation, mills at Lowell.
 WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills
 at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Frank-
 lin, Uxbridge.
 HENRY A. BODWELL, Andover, Superintendent, Smith and Dove Manufacturing Company,
 class of 1900.
 EDWARD H. ABBOT, Graniteville, Vice-President and Agent, Abbot Worsted Company, class
 of 1904.

FOR TERM ENDING JUNE 30, 1921.

ALEXANDER G. CUMNOCK, Lowell, Treasurer, Appleton Company, Boston corporation, mills
 at Lowell.
 ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.
 GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer.
 ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.
 HERBERT WATERHOUSE, North Chelmsford.

General Committees.

FINANCE COMMITTEE.

ALEXANDER G. CUMNOCK.
ARTHUR G. POLLARD.

FREDERICK A. FLATHER.
ROYAL P. WHITE.

COTTON AND KNITTING.

FREDERICK A. FLATHER.

GEORGE H. SAYWARD.

T. ELLIS RAMSDELL.

WOOLEN AND WORSTED.

HENRY A. BODWELL.

GEORGE E. KUNHARDT.

HERBERT WATERHOUSE.

CHEMISTRY AND DYEING.

WILLIAM R. MOORHOUSE.

EDWARD M. ABBOT.

WILLIAM A. MITCHELL.

DESIGNING AND FINISHING.

GEORGE E. KUNHARDT.

ARTHUR G. POLLARD.

ROYAL P. WHITE.

ENGINEERING.

THOMAS T. CLARK.

HENRY A. BODWELL.

FREDERICK A. FLATHER.

ATHLETICS.

ROYAL P. WHITE.

EDWARD M. ABBOT.

WILLIAM R. MOORHOUSE.

EVENING SCHOOL.

HUGH J. MOLLOY.

WILLIAM A. MITCHELL.

PERRY D. THOMPSON.

OFFICERS OF INSTRUCTION AND ADMINISTRATION.

CHARLES HOLMES EAMES, S.B.,	Billerica.
President.	
LOUIS ATWELL OLNEY, S.B., M.S.,	118 Riverside Street.
Professor of Chemistry; in charge of Department of Chemistry and Dyeing.	
EDGAR HARRISON BARKER,	9 Mount Hope Street.
In charge of Department of Woolen and Worsted Yarns.	
ARTHUR ANDREW STEWART,	53 Mount Hope Street.
In charge of Department of Finishing.	
STEPHEN EATON SMITH,	409 Lowell Street, Methuen.
In charge of Department of Cotton Yarns and Knitting.	
HERMANN HENRY BACHMANN,	1190 Middlesex Street.
In charge of Department of Textile Design and Power Weaving.	
LESTER HOWARD CUSHING, A.B.,	501 Wilder Street.
Secretary of the Faculty; in charge of Department of Languages, History and Economics.	
HERBERT JAMES BALL, S.B., B.C.S.,	119 Wentworth Avenue.
In charge of Department of Textile Engineering.	
ROBERT REID SLEEPER,	112 Charles Street.
Instructor in Dyeing.	
ULYSSES JOHN LUPIN, S.B.,	Chelmsford.
Instructor in Mathematics, Physics and Electrical Engineering.	
CHARLES HARRISON JACK,	R. F. D. No. 3, Nashua, N. H.
Instructor in Machine-shop Practice.	
JOHN CHARLES LOWE,	29 Gill Avenue, Methuen.
Instructor in Woolen and Worsted Yarns.	
CORNELIUS LEONARD GLEN,	543 Fletcher Street.
Instructor in Finishing.	
MARTIN JOHN HOELLRICH,	30 Saxonia Avenue, Lawrence.
Instructor in Weaving.	
ARTHUR KIMBAL JOHNSON, S.B.,	37 Varney Street.
Instructor in Chemistry.	
GUY EUGENE BRANCH,	85 Berkeley Street, Lawrence.
Instructor in Woolen and Worsted Yarns.	
EDWARD KNEVALS HULL,	15 Queensbury Street, Boston.
Instructor in Mechanical Drawing.	
ELMER EDWARD FICKETT, B.S.,	Standish Street.
Instructor in Quantitative Analysis.	
JAMES ALLAN TUCK, S.B.,	108 Intervale Street, Roxbury.
Instructor in Mechanical Engineering.	
LEWIS PAUL CHAPIN, Ph.D., B.S.,	Billerica.
Instructor in General Chemistry and Qualitative Analysis.	
FREDERICK STEERE BEATTIE, Ph.B.,	143 Grove Street.
Instructor in Organic Chemistry.	
HARTMAN FRANK SCHMIDT,	1 Rhodora Street.
Instructor in Textile Design and Cloth Analysis.	
WENDELL HOWARD KAYSER, S.B.,	31 Bellevue Street.
Instructor in Mathematics, Mechanics and Drawing.	

JOHN NEWTON HOWKER,	89 Centre Street, Methuen.
Evening Instructor in Wool Sorting and Scouring.	
HOWARD DEXTER SMITH, Ph.D.,	669 Westford Street.
Evening Instructor in General Chemistry.	
EMMA ELIZABETH WHITNEY,	39 Dover Street.
Evening Instructor in Freehand Drawing.	
EDITH CLARA MERCHANT,	268 Westford Street.
Evening Instructor in Freehand Drawing.	
HAMAZASB DER MANUELIAN, S.B.,	355 High Street.
Evening Instructor in Mechanical Drawing.	
CLIFTON LITTLEWOOD RICE, A.B., M.C.E.,	29 Woodward Avenue.
Evening Instructor in Mathematics.	
CHARLES PEIRCE,	85 Butman Road.
Evening Instructor in Power Weaving.	
WALTER BALLARD HOLT,	18 Mount Vernon Street.
Bursar.	
STELLA FRANCES MORRILL,	Tewksbury.
Registrar.	
FLORENCE MOORE LANCEY,	46 Victoria Street.
Librarian.	
AGNES LOUISE TAISEY,	499 Wilder Street.
Secretary.	
GILBERT ROSCOE MERRILL,	96 Dingwell Street.
Student Assistant in Cotton Yarn Department.	
RAYMOND RUSSELL STEVENS,	12 Waldo Street, Dracut.
Student Assistant in Chemistry and Dyeing Department.	
ARTHUR JULIUS ANDERSON,	28 Mount Washington Street.
Student Assistant in Chemistry and Dyeing Department.	
AL EDWIN WELLS,	178 Perry Street.
Student Assistant in Textile Engineering Department.	



Decorative Art.

THE LOWELL TEXTILE SCHOOL.

HISTORY. — The Lowell Textile School was established by the Trustees of the Lowell Textile School of Lowell, Massachusetts, incorporated in accordance with chapter 475, Acts of 1895. The movement for the establishment of the school dates from June 1, 1891, but it was not opened for instruction until February 1, 1897.

In accordance with the acts of incorporation the Board of Trustees consisted of twenty permanent and self-perpetuating members, three-fourths of whom must be "actively engaged in, or connected with, textile or kindred manufactures." In addition, His Honor the Lieutenant-Governor, the Commissioner of Education of the State, the mayor, the president of the municipal council, the superintendent of schools of Lowell, and a representative of the textile council were members *ex officio*. Legislative acts of 1905 and 1906 authorized the graduates of the school to elect four trustees serving for periods of four years each.

By virtue of the anti-aid amendment to the State Constitution, and by chapter 274, General Acts of 1918, the property of the school was transferred on July 1, 1918, to the Commonwealth of Massachusetts, and the control and management of the school was vested in a Board of Trustees appointed by the Governor, "with all the powers, rights and privileges and subject to all the duties" of the original Board.

OBJECT. — The object of the establishment of the school as set forth in the original act was "for the purpose of instruction in the theory and practical art of textile and kindred branches of industry."

The plan was occasioned by the apparent crisis in the leading industry of New England, due to the rapid development of the manufacture of the coarser cotton fabrics in the southern States. It was believed that this crisis could be met only by a wider and more thorough application of the sciences and arts in the production of finer and more varied fabrics.

Following the general methods and systems found successful at the higher polytechnic institutes, it offers thorough instruction in principles of the sciences and arts applicable to textile and kindred branches of industry. The courses treat not only of the theory but also the application of these principles in the processes, on the machines and throughout all departments of industry involved in the successful manufacture, application and distribution of textile material in any form.

Because of the breadth, grade and character of instruction given, and because of the standing and personnel of the instructing staff, the school has been placed by both Federal and State educational boards in the class of the higher technological schools of this country.

PLANT. — In locating the school at Lowell, which has been called the "Mother Textile City of America," considerable advantage is secured by close association with every branch of the industry, utilizing in the products of the great Merrimack Valley textile district almost every commercial fiber.

Although the school was formally opened by Governor Roger Wolcott on January 30, 1897, in rented quarters in the heart of the city, it was not until January, 1903, that the first buildings of the present plant were ready for occupancy. On February 12, 1903, Governor John L. Bates dedicated the present buildings.

The site is a commanding one, consisting of about 15 acres at a high elevation on the west bank of the Merrimack River. It extends to and overlooks the rapids of Pawtucket Falls, which was the first water power in America to be used on an extensive scale to operate power looms. It was contributed by Frederick Fanning Ayer, Esq., of New York City, and the Proprietors of the Locks and Canals on the Merrimack River.

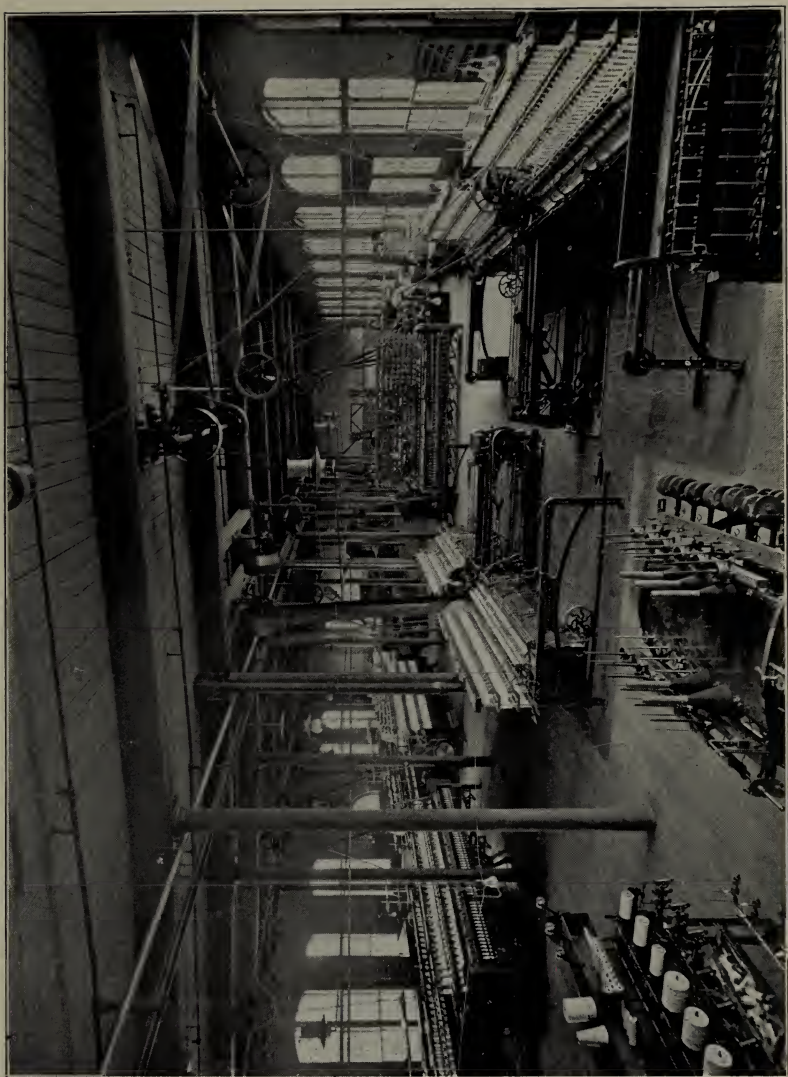
Southwick Hall, the main building, fronting on Moody Street, was contributed by the Commonwealth of Massachusetts and Frederick Fanning Ayer, Esq., and is a memorial to Royal Southwick, a leading textile manufacturer, a public man of earlier days, and a maternal ancestor of Mr. Ayer. It includes a central mass 90 by 90 feet, having three stories and two wings 80 by 85 feet each with two stories and well-lighted basements. The building is pierced in the center by an arched way from which access is had to the wings and to the central courtyard. The northern wing is occupied by the General Offices, Engineering and Finishing departments, and Library, while the southern wing is entirely occupied by the Chemistry and Dyeing departments.

Kitson Hall, dedicated to the memory of Richard Kitson, was contributed by Charlotte P. Kitson and Emma K. Stott, his daughters; the Kitson Machine Company of Lowell, founded by Mr. Kitson, was also a generous contributor. This hall makes a right angle with Southwick Hall, is 70 by 183 feet, and has two stories and a basement. The first floor is occupied by the Cotton Yarn and Knitting departments, while the basement contains the Mechanical and Electrical Engineering laboratories and the Machine Shop.

The Falmouth Street Building forms the third side of the quadrangle, and consists of three portions, one 60 by 75 feet, three stories, one 75 by 130 feet, three stories, and the head house 70 by 80 feet, three stories and basement. The building is occupied by the picker section of the Cotton Yarn Department, the Design and Power Weaving Department and by the Woolen and Worsted Yarn Department, and contains on the lower floors an equipment for the manufacture of wool yarn from the fleece to the finished yarn. The upper floors are occupied by a great variety of plain, dobby and Jacquard looms, and in a section of the building are the students' lockers and recreation rooms.

Colonial Avenue Building was erected in the summer of 1910 from plans prepared by the Engineering Department, which also had in charge the work of construction. The building completes the fourth side of the quadrangle, and in outward appearance corresponds to the architectural features of the other school buildings. It is a single-story building, and has the dimensions of 195 by 60 feet. Its interior is faced with cement brick made at the school during the progress of the work. These serve to give light reflecting walls which are advantageous for the work of the Wool Manufacturing, Cotton Finishing and Chemistry and Dyeing departments that occupy this building. The funds for this building were provided by the State of Massachusetts.

The buildings are all faced on the exterior with light brick with granite and Indiana limestone trimmings. They are of modern mill construction adapted to educational uses. The floor space of the several departments is as follows: —



Cotton Yarn Department.

	Square Feet.
Cotton Yarns and Knitting,	16,200
Woolen and Worsted Yarns,	28,160
Textile Design and Decorative Art,	16,806
General Chemistry and Dyeing Laboratories,	28,400
Finishing Cotton, Woolen and Worsted,	10,606
Power Weaving,	15,360
Textile Engineering,	24,297
Power plant,	10,047
Assembly and physical culture halls,	10,800
Entrances, corridors, stairways, etc.,	14,487

Additional floor space is devoted to Administration Offices, Library, classrooms, storerooms, etc.

GENERAL INFORMATION. — Though from the first the management has kept in view the clearly defined objective which called for the establishment of the school, to meet the needs of the textile and kindred industries, it has developed its curriculum, its methods of instruction, and equipment as those needs arose. This objective will be kept constantly in view, and as new demands are presented an effort will be made to extend courses, equipment and floor space. The mechanical equipment of the school includes the best makes of textile machinery, and these machines, while built as they would be for regular work, are, as far as possible, adapted to the experimental work which is of particular value in such an institution as this. There is a more varied equipment in this school than in any other, either in America or Europe, and it is now possible to convert the raw stock into the finished fabric within the school.

The day classes have been organized for those who can devote their entire time for three or more years to the instruction requisite in preparing to enter the textile industries. It has been found necessary to require of all such students educational qualifications equivalent to those given by a regular four-year course of a high school or academy of good standing.

The evening classes are held for about twenty weeks of the year, and are for those who are unable to attend the day courses. These are similar to the day courses, but are aimed especially to meet the needs of students working during the day in the mills and shops. For entrance to these classes an applicant should have the equivalent of a grammar school education. A detailed description of these courses and requirements will be given in the August Bulletin, which will be sent upon request.

The school has so advanced in the standard and character of its work, as well as the standard for admission to its day classes, that the Legislature of the State of Massachusetts granted to the school the power to confer degrees of Bachelor of Textile Engineering (B.T.E.) and Bachelor of Textile Chemistry (B.T.C.) upon those students who satisfactorily complete one of the prescribed four-year courses.

The growth of the school has been constant, as is evident from the fact that when it was opened, February 1, 1897, there were 32 day and 110 evening pupils. On April 10, 1919, the roster showed 222 day pupils and 398 evening pupils, or 620 in all. The registration in both day and evening classes during the year 1918-19 has been considerably affected by the war conditions and demands.

EQUIPMENT.

The equipment of machinery, inventoried July 1, 1918, at \$291,519.40, is most varied for textile educational purposes, and is being constantly augmented. The builders of the various machines installed keep in close touch with the school, adding to the machines such improvements as are made from time to time, and each year some new machine will be added by a manufacturer who finds it to his advantage to be represented here. This operates to mutual advantage of student and manufacturer.

COTTON YARNS DEPARTMENT.

Ginning:

- One 50-saw gin made by Daniel Pratt Gin Company, Prattsville, Ala.
- One Prior roller gin.

Opening, picking and waste machinery:

- An outfit of Kitson picking machinery from works of Saco-Lowell Shops, Lowell, Mass., including:
 - One 40-inch two beater breaker lapper with automatic feeder.
 - One 40-inch single beater intermediate finisher lapper with Perham & Davis sectional plate evener, apron to double four laps.
 - One 40-inch single beater finisher lapper with Perham & Davis sectional plate evener, apron to double four laps, Kirschner patent carding beater.
 - One roving waste opener.
 - One thread extractor.
- The power for this picker section is furnished through a Westinghouse 15-horse power, 220-volt direct-current motor.

Carding, combing and dyeing:

- The following machinery made by the Saco-Lowell Shops, Lowell, Mass.:
 - One top flat card. Two drawing frames.
 - Three revolving flat cards. Stripping rolls, etc.
 - Two railway heads.
 - Two of these cards form a unit of a waste carding equipment.
 - One of these cards is equipped with Chapman electric neutralizer, made by the Chapman Electric Neutralizer Company, Portland, Me.
- From the Whitin Machine Works, Whitinsville, Mass.:
 - One 40-inch revolving flat card. One 6-head ribbon lapper.
 - Card grinding rolls. One 4-head ribbon lapper.
 - One sliver lapper. One 2-head comber.
 - One 6-head comber. One 8-head comber.
- From the Mason Machine Works, Taunton, Mass.:
 - One sliver lap machine and one comber.
- From John Hetherington & Sons, Ltd., Manchester, Eng.:
 - One 2-head comber and one model comber head.

Roving, spinning and twisting:

- From Saco-Lowell Shops, Lowell, Mass.:
 - One slubber for waste spinning unit. Three ring spinning frames.
 - One slubber. One spinning mule.
 - One intermediate. One spooler.
 - One fine frame. One wet and dry twister.
 - One Jack frame.



woolen and Worsted Yarn Department.

Roving, spinning and twisting — *Con.*

From Fales & Jenks, Pawtucket, R. I.:

One wet and dry twister.

From Draper Company, Hopedale, Mass.:

One wet and dry twister.

From Whitin Machine Works, Whitinsville, Mass.:

Three ring spinning frames.

From Woonsocket Machine and Press Company, Woonsocket, R. I.:

One intermediate fly frame.

From Asa Lees Company, Oldham, Eng., Wm. Firth Company, Agents:

One mule for fine spinning.

Miscellaneous machinery of this department includes:

From the Saco-Lowell Shops, Lowell, Mass.:

One reel and models of each of the following:

Fine fly frame.

Flat grinding device.

Fly frame compound.

Scroll setting device.

Card feed.

From Draper Company, Hopedale, Mass.:

One Weeks banding machine and one Moscrop single-thread testing machine.

Miscellaneous machines:

One yarn inspection machine with blackboards.

Two Barber knotters.

One power yarn tester.

Two yarn reels and grain scales.

One twist counter.

From Howard Brothers, Worcester, Mass.:

Two exhibition boards, one of hand cards, and one of card clothing.

The power for the yarn section is furnished through one 10-horse power Allis-Chalmers motor, and one 15-horse power Allis-Chalmers motor.

Knitting Section.**Winding machinery:**

One universal winder, 6 spindles for cones and tubes.

One Payne bobbin winder.

One Foster winder, 10 spindles for cones and tubes.

Hosiery machines:

One Acme full automatic $3\frac{1}{2}$ -inch cylinder, 160 needles.

One Acme full automatic $3\frac{1}{2}$ -inch cylinder, 200 needles.

One Mayo Model A full automatic $3\frac{1}{2}$ -inch cylinder, 120 needles.

One Mayo Model A full automatic $3\frac{1}{2}$ -inch cylinder, 200 needles.

One Mayo Model C full automatic $3\frac{1}{2}$ -inch cylinder, 220 needles.

One Scott & Williams new automatic $3\frac{1}{2}$ -inch cylinder, 176 needles.

One Scott & Williams Model G $3\frac{1}{2}$ -inch cylinder, 220 needles.

One Banner full automatic $3\frac{1}{2}$ -inch cylinder, 200 needles.

One Brinton full automatic $3\frac{1}{2}$ -inch cylinder, 176 needles.

One Branson hand machine, $3\frac{1}{2}$ -inch cylinder, 80 needles.

Machines in this group are equipped with special attachments for producing lace front work, high splicing, double soling and striped work:

One Wildman ribber, $3\frac{1}{2}$ -inch cylinder, 160 needles.

One Wildman ribber, $3\frac{1}{2}$ -inch cylinder, 176 needles.

One Wildman fancy ribber, $3\frac{1}{2}$ -inch cylinder, 200 needles.

One Wildman ribber, $3\frac{1}{2}$ -inch cylinder, 220 needles.

One Wildman striping ribber, $5\frac{1}{2}$ -inch cylinder, 240 needles.

One Brinton ribber, $3\frac{1}{2}$ -inch cylinder, 176 needles.

One Brinton ribber, $3\frac{1}{2}$ -inch cylinder, 200 needles.

One Brinton tie machine, $1\frac{1}{2}$ -inch cylinder, 100 needles.

Underwear machinery:

One Crane spring needle machine, 19-inch cylinder, 1,040 needles.

One Scott & Williams ribber, 19-inch cylinder, 12 cut.

One Wildman ribber, 20-inch cylinder, 8 cut.

Flat machines:

- One Lamb glove machine, 8-inch bed, 6 cut.
- One Lamb knitting machine, 18-inch bed, 5 cut..
- One Lamb sweater machine, 24-inch bed, 4 cut.
- One Grosser sweater machine, 32-inch bed, 3 cut.
- One Grosser Jacquard machine, 16-inch bed, 10 cut.
- One Dubied scarf machine, 18-inch bed, 18 cut.

Finishing machines:

- One Grosser 2-thread looper, 22 point.
- One Hepworth looper, 16 point.
- Five Union special sewing machines for overseaming, double stitch covering, seaming and wetling and vest finishing.
- Six Merrow sewing machines, including two shell stitch machines and three overseaming and crocheting machines.
- Three Singer machines for plain sewing, buttonholing and button sewing.
- The power for this section is supplied through a 7½-horse power, 220-volt Westinghouse motor.

WOOLEN AND WORSTED DEPARTMENT.**Wool sorting and grading:**

This room is thoroughly equipped with benches, baskets, etc., for sorting wool in a convenient manner, and in addition there are samples of all grades and types of wool and other fibers.

Scouring and carbonizing:

- Wool scouring machinery, C. G. Sargent's Sons Corporation, Graniteville, Mass., consisting of:
 - Cone duster for grease wool.
 - Two scouring bowls, each 17 feet by 24 inches, with parallel rakes and automatic feeder for scouring bowls.
 - One single apron dryer, with automatic feeder.
 - Carbonizing screw acid tank and duster, with crush rolls.
- From North Chelmsford Machine Company:
 - One rinse box.
- From Schaum & Uhlinger, Philadelphia, Pa.:
 - One hydro-extractor.
- From C. S. Dodge, Lowell, Mass.:
 - One shoddy picker and one bagging stand.
- The power for this section is supplied through a 20-horse power General Electric 220-volt motor.

Woolen.**Picking:**

- One Parkhurst Burr picker, Atlas Manufacturing Company, Newark, N. J.
- One mixing picker, Davis & Furber Machine Company, North Andover, Mass., equipped with improved mixing picker feed and Spencer oiler, both made by George S. Harwood & Son, Boston, Mass.

Carding:

- One set of woolen cards, including:
 - First breaker, second breaker and finisher, Davis & Furber Machine Company, North Andover, Mass.; this set of cards equipped with Bramwell first breaker feed (George S. Harwood & Son, Boston, Mass.); Torrance halling head and creel (Torrance Manufacturing Company, Harrison, N. J.) between first breaker and second breaker; Apperly feed (George S. Harwood & Son, Boston, Mass.) between second breaker and finisher; and combination rub rolls and apron condenser (Davis & Furber Machine Company, North Andover, Mass.) on finisher. These cards are for medium or coarse work.
- One set of Davis & Furber woolen cards, including:
 - First breaker, second breaker and finisher. This set of cards equipped with Bramwell first breaker feed (George S. Harwood & Son, Boston, Mass.); Apperly feed with Kemp traveler (George S. Harwood & Son, Boston, Mass.) between first breaker and second breaker; Bates feed (E. V. Bates, Lowell, Mass.) between second breaker and finisher; and Davis & Furber double apron condenser on finisher. These cards are for fine work.



Wool Combing.

Carding — Con.

- Both sets of cards are equipped with Chapman electric neutralizer, made by Chapman Electric Neutralizer Company, Portland, Me.
- One sample mixing card, Torrance Manufacturing Company, Harrison, N. J.

Spinning:

- One spinning mule, 120 spindles, Davis & Furber Machine Company, North Andover, Mass.; bobbin holders, supplied by American Bobbin Holder Company, West Medway, Mass.
- One spinning mule, 120 spindles, Johnson & Bassett, Worcester, Mass.; bobbin holders supplied by Murdock & Geb, Franklin, Mass.
- One 1907 fancy yarn twister, 20 spindles, Davis & Furber Machine Company, North Andover, Mass.

Card grinding:

- One Roy grinding frame, B. S. Roy & Son, Worcester, Mass.
- Two Roy traverse grinders, B. S. Roy & Son, Worcester, Mass.
- One Entwistle traverse grinder, T. C. Entwistle Co., Lowell, Mass.
- One complete set of carder's tools, W. H. Brown, Worcester, Mass.

Worsted.**Carding:**

- One 50-inch double-cylinder worsted card (4 licker-in), Davis & Furber Machine Company, North Andover, Mass., equipped with Bramwell feed, George S. Harwood & Son, Boston; also equipped with a Chapman electric neutralizer, Chapman Electric Neutralizer Company, Portland, Me.

Backwashing:

- One double bowl, 5-cylinder backwasher, with gill box, Taylor-Wadworth & Co., Leeds, Eng., equipped with blueing motion, oiling motion, and Layland patent pressure motion.

Gilling:

- One doubling balling head gill box (with double screws), Saco-Lowell Shops, Lowell, Mass.
- One weigh gill box and creel, Saco-Lowell Shops, Lowell, Mass.

Combing:

- One baller (punch), Crompton & Knowles, Worcester, Mass.
- One Noble worsted comb, Crompton & Knowles, Worcester, Mass.

Gilling:

- One finishing can gill box, Hall & Stell, Keighley, Eng.
- One finishing balling head gill box, Hall & Stell, Keighley, Eng.

BRADFORD SYSTEM OF DRAWING, SPINNING AND TWISTING.

The following drawing, spinning and twisting machinery from Prince Smith & Son, Keighley, Eng.:

- | | |
|-----------------------------------|-------------------------------------|
| One revolving creel for 12 balls. | One double head can gill box. |
| One 2-spindle drawing box. | One 2-spindle gill box. |
| One 2-spindle weigh box. | One 2-spindle flyer spinner. |
| One 4-spindle first finisher. | One 12-spindle ring spinner. |
| One 12-spindle dandy reducer. | One 12-spindle 2-fold cap twister. |
| One 12-spindle cap spinner. | One 12-spindle 6-fold ring twister. |

The following drawing, spinning and twisting machinery from the Saco-Lowell Shops, Lowell, Mass.:

- | | |
|--------------------------------|---|
| One 2-spindle drawing box. | One 3-spindle cone rover. |
| One 6-spindle second finisher. | One 48-spindle cap spinner, 5-foot end. |
| One 24-spindle dandy rover. | One 48-spindle cap spinner, 4-foot end. |
| One 6-spindle cone reducer. | One 48-spindle Boyd ring twister. |
- Yarn conditioning machine, C. G. Sargent's Sons Corporation, Graniteville, Mass.
- One 6-gang Universal winder, equipped for cones or straight tubes, Universal Winding Company, Boston, Mass.

One tape band sewing machine, the Singer Manufacturing Company, New York.

The power for this yarn section as well as for the Power Weaving Department is supplied through two 24-horse power Allis-Chalmers motors.

FRENCH SYSTEM OF DRAWING AND SPINNING.

The machinery made by the Société Alsacienne de Constructions Mécaniques, at Mulhouse, France, consists of the following:

Peigneuse-Laine modèle P. L. B.	Model P. L. B. comb with creel for 24 doublings.
Intersecting de 2 têtes. Pass. I and II après Peigneuses.	Intersecting gill box (2 heads).
Gill box (2 têtes).	Gill box (2 heads).
Étirage à Frottoirs (2 têtes).	First drawing (2 heads).
Étirage à Frottoirs (2 têtes).	Second drawing (2 heads).
Étirage à Frottoirs (2 têtes).	Third drawing (2 heads).
Étirage Réunion (4 peignes).	Reducer (4 porcupines).
Bobinier de Chûte (8 peignes).	Slubber (8 porcupines).
Bobinier (8 peignes).	First intermediate (8 porcupines).
Bobinier (8 peignes).	Second intermediate (8 porcupines).
Bobinier (8 peignes).	Rover (8 porcupines).
Finisseur (16 peignes).	Finisher (16 porcupines).
Self-acting à Filer (150 broches).	Self-acting worsted mule (150 spindles).

The apparatus in this section for obtaining and preserving the requisite condition of humidity consists of twelve turbo humidifier heads from the G. M. Parks Company, Fitchburg, Mass., automatically controlled by a humidity regulator made by this same company. The compressed air for these heads is supplied by an Ingersoll-Rand 8 by 8 steam-driven air compressor located in power house.

The power of this section is supplied through a 15-horse power Allis-Chalmers 220-volt motor.

Textile Testing Laboratory.

Several years ago the importance of testing fibers, yarns and fabrics began to be appreciated, and through the generosity of a friend a beginning was made by the establishment of a laboratory where the physical properties of textiles may be determined and studied. To the original equipment have been added several pieces of apparatus, so that there is in the laboratory the following equipment:

- One Bausch & Lomb D. D. microscope provided with regular eye pieces and objective for low power, high power or photographic work.
 - One eye piece micrometer.
 - One filar micrometer (1-inch equivalent eye piece) for refined diameter determinations.
 - One Standard glass stage with corrections from comparison against the international millimeter.
 - Complete outfit for mounting slides and for taking photomicrographs.
 - Camera lucida.
 - Microtome sectioning outfit.
 - One small skein testing machine.
 - One electric conditioning oven, Emerson Apparatus Company, Boston.
 - One single yarn testing machine, made by G. R. Smith & Co., Bradford, Eng.
 - One hydraulic cloth strength testing machine for 4-inch samples, made by G. R. Smith & Co., Bradford, Eng.
 - One hand cloth strength testing machine for 1-inch samples, made by Brown Brothers, Providence, R. I.
 - One Brown & Sharpe meter reel.
 - Three Lowinson's thread micrometers, Charles Lowinson, New York City.
 - One strength testing machine, made by Louis Schopper, Leipzig, Ger. Capacity, 500 kilograms for test pieces 50 millimeters in width, and from 100 to 400 millimeters in length. Provided with special jaws to test twine, strings, cords or fabrics.
 - One fiber testing machine, made by Louis Schopper. Capacity, 1 gram to 1.5 kilograms. Provided with jaws to test fiber or fine yarns.
 - One yarn strength testing machine, made by Louis Schopper. Capacity, 1,000 to 5,000 grams. Length of test pieces, 200 to 1,000 millimeters.
 - One yarn strength testing machine, made by Louis Schopper. Capacity, 5 to 30 kilograms. Test pieces, 500 millimeters.
 - One hygrometer, Dr. Koppe's system.
 - One accurate tread or pick counter.
 - One Universal quadrant scales for determining counts of yarn by the various yarn systems in use.
- These last three pieces of apparatus are also made by Louis Schopper, Leipzig, Ger.



Weave Room.

The laboratory has been constructed to give plenty of light. The temperature and humidity of the room are controlled by the automatic humidity and temperature regulator, made by the American Moistening Company of Boston, Mass.

Yarn weighing and testing:

From Lowell Scale Company:

One large platform scale.

From Howe Scale Company:

One dram scale.

One gram scale.

One ounce scale.

One pound and ounce scale.

Two yarn reels.

Complete set of roving cans from the Laminar Fibre Company, North Cambridge, Mass.

Miscellaneous apparatus:

One roving reel.

Three grain scales.

One run beam.

One hand yarn strength tester.

Two twist counters.

Two Barber knotters.

DESIGN AND POWER WEAVING DEPARTMENT. -

Design department:

One Christian Becker balance.

Five Volland & Sons balances.

One twist tester, James H. Heal, Halifax, Eng.

One microscope, Bausch & Lomb.

One reel, Brown & Sharpe Manufacturing Company, Providence.

One pick counter, Charles Lowinson, New York City.

One Torsion calculation balance, Torsion Balance Company, New York.

One grain roving scales, Brown & Sharpe, Providence.

One gram roving scale, Brown & Sharpe, Providence.

Miscellaneous dies for cutting accurately standard sizes of cloth.

Cotton warp preparation equipment consists of:

One spooler, a warper and slasher made by Saco-Lowell Shops, Lowell, Mass.

One beamer, T. C. Entwistle Company, Lowell, Mass.

One winder, Altemus & Co., Philadelphia, Pa.

One 400-end improved Draper warper, Draper Company, Hopedale, Mass.

Drawing-in frames, etc.

One patented slasher press roll, J. Battles & Co., Lawrence, Mass.

One patented expansion comb for warper, T. C. Entwistle Company, Lowell, Mass.

One quiller, Johnson & Bassett, Worcester, Mass.

Set of 6-inch spools for warper, Macrodi Fiber Company, Woonsocket, R. I.

One Universal winder for cop and bobbin winding, Universal Winder Company, Boston, Mass. This is driven by a 1 to 8 horse power 220-volt direct-current motor, made by Holtzer-Cabot Electric Company.

Woolen and worsted warp preparation:

From Davis & Furber Machine Company, North Andover, Mass.:

Two 40-end Jack spoolers.

One 60-inch reel.

Two spool racks for 12 spools each.

One 82-inch reel.

One pattern dry frame dresser.

One double head beamer.

One pipe and cylinder dresser.

Braiding machinery:

Made by the New England Butt Company, Providence, R. I.:

One 24-line Hercules braider.

One tubular braider.

One 12-line braider.

One soutache braider.

Silk preparing machinery:

One winder, Atwood Machine Company, Stonington, Conn.

One ribbon quiller, Atwood Machine Company, Stonington, Conn.

One warper and beamer, Swiss style, Atwood Machine Company, Stonington, Conn.

One double frame, Atwood Machine Company, Stonington, Conn.

The power for the warp-preparing section is supplied through a 7½-horse power, 220-volt General Electric motor.

Plain looms:

From Draper Corporation, Hopedale, Mass.:

- One plain Northrup.
- One improved Northrup.
- One 8-harness corduroy.

From Saco-Lowell Shops, Lowell, Mass.:

- Nine plain looms.
- One 5-harness sateen.
- One 32-inch, 2 by 1 box.

From Whitin Machine Works, Whitinsville, Mass.:

- One side cam twill.
- One plain print cloth loom, equipped with Kip-Armstrong electric warp stop motion.
- One plain print cloth loom, Mason Machine Works, Taunton, Mass.
- One plain loom, Kilburn & Lincoln.
- One English loom, Hattersley.
- One 4-harness, side cam, Lewiston Machine Company.
- One Crompton jean loom.

Four of the above looms are equipped with Abbott cleavers, made by the Abbott Wire and Cast Steel Warp Cleaving Company, Lisbon Falls, Me.

Fancy looms:

One Northrup loom with dobby, Draper Corporation, Hopedale, Mass.

One bag loom, Lewiston Machine Company, Lewiston, Me.

One Stafford Ideal loom, 16-harness, automatic shuttle-changing device, Stafford Loom Company, Readville, Mass.

One 20-harness dobby loom, Whitin Machine Company, Whitinsville, Mass.

From Crompton & Knowles Loom Works:

- One Knowles gingham, 4 by 1 boxes.
- One Crompton gingham, 4 by 1 boxes.
- One Crompton towel, 2 by 1 boxes.
- One Crompton lappet in the 16-harness dobby.
- One Knowles fancy cotton, 20-harness dobby, 4 by 1 boxes, for fancy leno work.
- One Crompton fancy cotton, single cylinder, 20-harness dobby.
- One Knowles Gem, 20-harness, 4 by 4 boxes.
- One Crompton worsted, 24-harness, 4 by 4 boxes.
- One Crompton fancy, 6 by 1 double cylinder, 20-harness dobby.
- One heavy loom, 20-harness, 4 by 4 boxes.
- One Knowles blanket, 25-harness dobby, 4 by 4 boxes.
- One Crompton & Knowles blanket, 20-harness dobby, equipped with Draper automatic filling and changing device, and direct driven by General Electric motor.
- One Knowles worsted, 32-harness, 4 by 4 boxes.
- Three Knowles heavy woolen, 25-harness, 4 by 4 boxes.
- Three Crompton & Knowles intermediate, 25-harness, 4 by 4 boxes. One of these looms is operated by a direct-connected $\frac{1}{2}$ -horse power, 220-volt, 3-phase, 60-cycle General Electric motor.
- One model dobby attachment.

Jacquard looms:

One Stafford silk loom, 1,200-hook, Halton head.

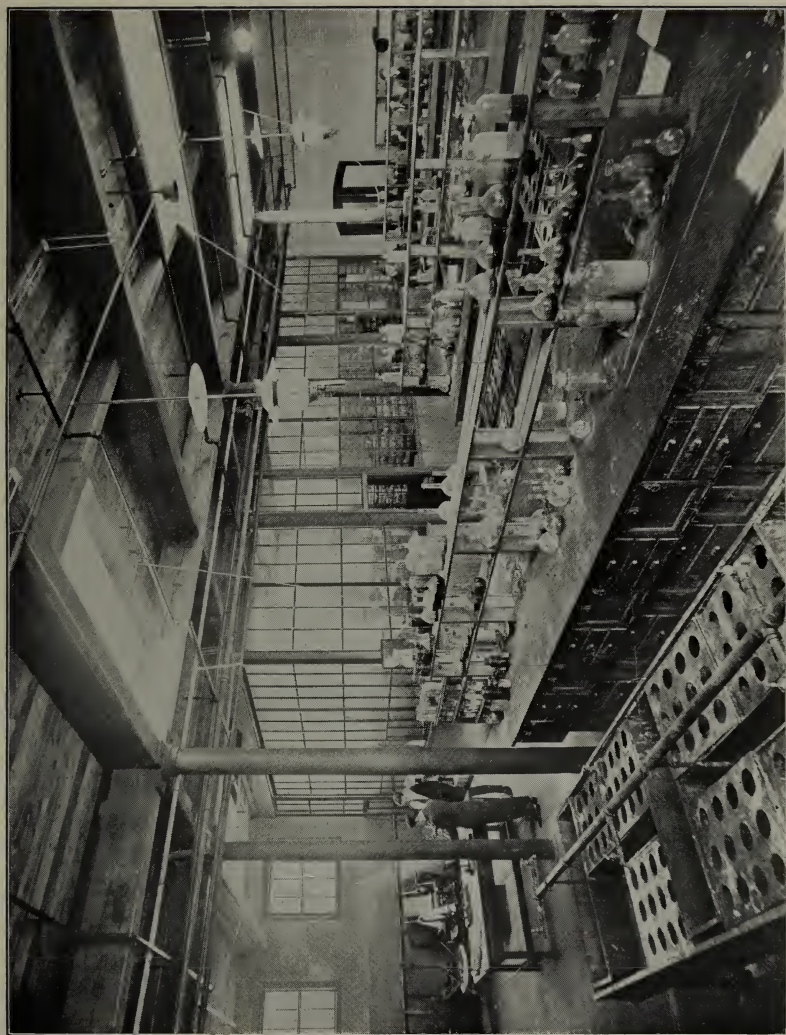
One 400-hook, single-lift, Schaum & Uhlinger Jacquard, mounted for 4-bank, narrow fabric loom.

One Felix Tonnar German plush loom, with 400-hook Crompton & Knowles Jacquard head.

One Skinner Brussels carpet loom, three-quarters wide, equipped with 1,280-hook Jacquard head. Presented by the Bigelow-Hartford Carpet Company, Clinton, Mass.

From Crompton & Knowles Loom Works:

- One Knowles fancy loom, single-lift Jacquard.
- One Knowles fancy loom, double-lift Jacquard.
- One Knowles fancy loom, Jacquard tied up for leno.
- One Knowles ingrain carpet loom, 4 by 4 boxes.
- One Knowles loom,*4 by 4 boxes, 54-inch, with 600-hook double-lift double-cylinder McMurdo Jacquard head. Tied up for damask napkin designs.
- One Crompton ingrain carpet loom, 4 by 4 boxes.
- One Crompton & Knowles 72-inch tapestry loom, with 2,600-hook Halton Jacquard head.



Experimental Dyeing Laboratory.

Jacquard looms — *Con.*

- One 840-hook double-lift, single-cylinder Jacquard on Crompton & Knowles 4-bank ribbon loom. This loom is driven by a direct-connected one-half horse power Westinghouse 220-volt, 60-cycle motor.
- One 800-hook, double-lift Knowles Gem silk brocade Jacquard machine, 4 by 4 boxes.

Card-cutting machines:

- One Jacquard fine index card-cutting machine, John Royle & Sons, Paterson, N. J.
- One Jacquard French index card-cutting machine, John Royle & Sons, Paterson, N. J.
- One Jacquard French index card-cutting machine, presented by the Bigelow-Hartford Carpet Company, Lowell, Mass.

Hand Loom Weaving.

- Twelve hand looms, 3 by 3 boxes, 20-harness dobby.
- Eight hand looms, 4 by 4 boxes, 24-harness dobby.
- Eight hand looms, 3 by 3 boxes, 32-harness dobby.
- Six hand looms, 4 by 4 boxes, 30-harness dobby.
- Two hand looms, 4 by 4 boxes, 32-harness dobby.
- Two hand looms, 4 by 4 boxes, 200-hook Jacquard.
- Two hand looms, 3 by 3 boxes, 200-hook Jacquard.
- Two hand looms, 3 by 3 boxes, 600-hook Jacquard.
- One hand loom, 48-harness.
- Two hand looms with treadles.
- Pattern warping stands.
- Beaming, drawing-in stands, etc.

• CHEMISTRY AND DYEING DEPARTMENT.

Chemical laboratories:

The General Chemistry and Qualitative Analysis Laboratory includes:

- One hundred and twenty laboratory desks, each containing a full set of apparatus for the first year's work in chemistry; also gas and water fittings, reagents and sinks.
- There are also four large double hoods, two steam baths and two Parsons' automatic gas generators.

Quantitative Laboratory:

- One No. 1 steam-heated water still made by Barnstead Water Still Company.
- One steam drying closet and several drying ovens.
- One large steam bath.
- One electrolytic table.
- Five hoods.
- Fifty laboratory desks, each fully provided with apparatus.

Balance Room:

- One large Christian Becker analytical balance.
- Seven small Christian Becker analytical balances.
- One Standinger analytical balance.
- One Eimer & Amend analytical balance.
- One H. L. Becker's Sons & Co. analytical balance.

Organic Laboratory:

- One electric combustion furnace.
- Three gas combustion furnaces.
- One Lother-Meyers furnace for table.
- Two autoclaves.
- One ball mill.
- One automatic stirring apparatus.
- One 3-horse power Holtzer-Cabot Electric Company's motor.
- Laboratory tables, lockers, hoods, electric ovens and heating apparatus, etc.

Instructor's Laboratory:

- Adjacent to the Organic Laboratory is arranged an Instructor's Laboratory equipped with steam bath, hood, cases and working benches.

Microscopic, Photographic and Colorimetric Laboratory:

Five benches for microscopical work.	One tintometer.
Five Bausch & Lomb compound microscopes.	One Ives colorimeter.
One Natchet et Fils compound microscope.	

One polariscope made by Franz Schmidt & Haensch, Berlin, Ger.

One spectroscope made by John Browning, London, Eng.

One Bausch & Lomb Model G photomicrographic apparatus equipped with a D. D. S. microscope and all necessary apparatus.

Desks and shelves for the apparatus and reagents necessary for this branch of the work.

Adjoining this laboratory is a dark room for spectrum analysis, photometric and photographic work, etc.

In this dark room has been placed a piece of apparatus for determining the relative fading powers of various light sources. Besides the common gas and electric lamps there is installed a solar determinator, made by the Atlas Electric Company, Chicago, Ill.; also a 400-watt Nela Trutint and color matching unit, made by Nela Specialties Division, Cleveland, Ohio.

Assistant Instructor's Laboratory:

One large case of chemicals.

One double hood.

One copper water bath.

One soapstone sink with a drain board.

Benches, desks and complete fittings for water, gas and suction.

Private Laboratory:

One Thoenner balance.

One large hood.

One steam bath.

One experimental dye apparatus.

One large Bausch & Lomb microscope.

One Bausch & Lomb K. P. binocular microscope.

One case of chemicals and apparatus.

One steam jacketed kettle.

Three laboratory benches, with necessary fittings.

Chemical Lecture Room and Museum:

A lecture table fully equipped with gas, water, sinks, a hood and sufficient apparatus for lecture experiments.

An electric reflectroscope provided with suitable screen, which makes it possible to illustrate a lecture either from slides or by cuts, photographs or objects.

Seats for 80 students, arranged on a raised floor so that every student has a full view of the lecture table.

Various collections of dyestuffs and chemicals for exhibition and for lecture demonstration.

Experimental Dyeing Laboratory:

The Dyeing Laboratory is equipped with individual benches, small dyeing apparatus, reels, balances, apparatus for dye testing, such as frames for exposing dyed material to light, and a complete collection of dyestuff samples and sample cards.

Fifty-six steam coil experimental dyeing baths; also a drying chamber, aging chamber, etc.

Dye Stuff Room:

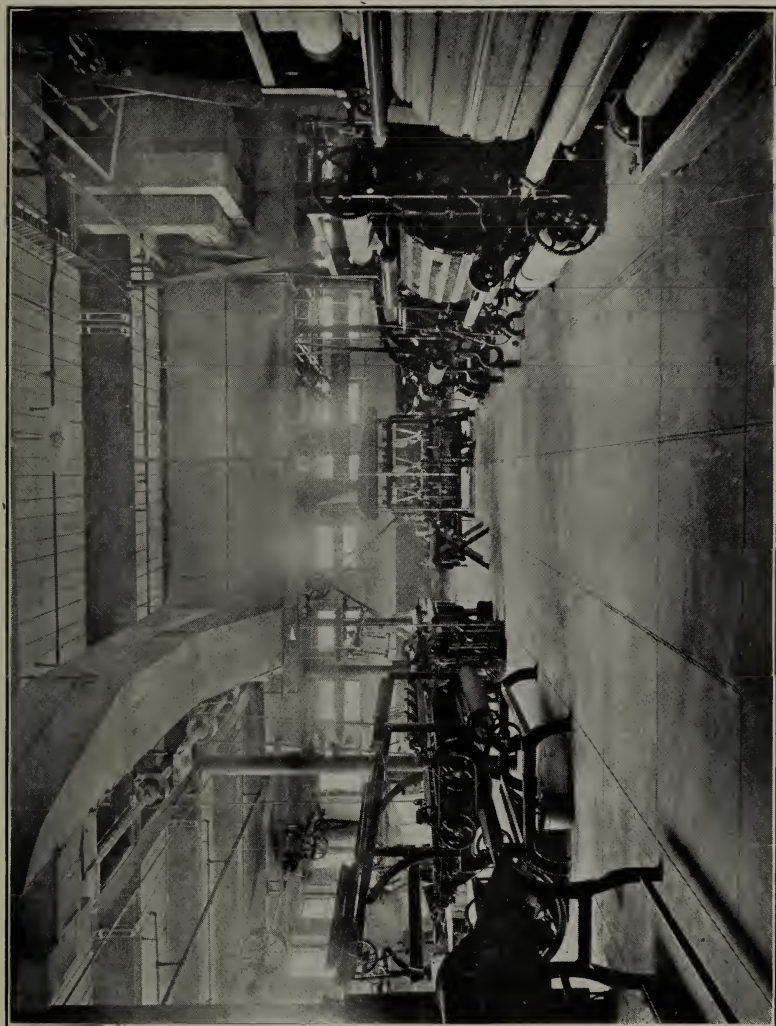
Adjacent to the Experimental Dyeing Laboratory there has been provided a well-lighted room for the storage of a great variety of dyestuffs. Steel shelving has been arranged so that the samples are easy of access. All samples are catalogued in a card file, thus facilitating their use. In this same room is provided a sink and cement table with balances.

Experimental Printing Laboratory:

One calico printing machine, made by Mather & Platt, Manchester, Eng.

One iron jacketed steaming chamber from A. Edmeston & Son, Patricroft, Eng.

One set of steam jacketed copper kettles.



Finishing Department.

Fuel and Oil Analysis Laboratory:

Mather bomb calorimeter, with complete outfit.	
Emerson bomb calorimeter, with complete outfit.	
Parr calorimeter.	Sartorius specific gravity balance.
Abbé refractometer.	Two Becker analytical balances.
Torsion viscosimeter.	Gas muffle furnace.
Tagliabue viscosimeter.	Kny-Scherer oil tester.
Tagliabue cold test apparatus.	Graefe gas calorimeter.
Pensky Martin oil tester.	Orsat gas analysis apparatus.
New York State oil tester.	Laboratory tables, lockers and hoods.

Industrial Chemistry Laboratory:

One filter press, Type E, T. Shriver & Co.	
One single-acting triplex plunger pump, Goulds Manufacturing Company.	
One vacuum drying apparatus, Norman Hubbard's Sons.	
One surface condenser, Norman Hubbard's Sons.	
One Packard vacuum pump, Norman Hubbard's Sons.	
One vacuum evaporator, Swenson system, American Foundry and Machine Company.	
One centrifugal, C. H. Chavant & Co.	
One double jar mill, F. I. Stokes & Co.	
Ten copper steam baths, D. H. Wilson & Co.	
One 36-inch ventilating fan, Massachusetts Fan Company.	
One autoclave.	One Sturtevant ore crusher.
Lockers and tables.	One Sturtevant pulverizer.
The power for this section is furnished through a 7½-horse power, 220-volt General Electric motor.	

Commercial Dyeing Laboratory:

One kier, Atlantic Works, East Boston, Mass.
 One small kier, fitted with E. D. Jefferson's circulating device.
 One electrolyzer for manufacturing bleaching solutions, the National Laundry Machine Company, Dayton, Ohio.
 One Permutit filter, the Permutit Company, New York City.
 One mercerizing machine.
 One raw stock dyeing machine, Klauder-Weldon Dyeing Machine Company, Yardley, Pa.
 One yarn dyeing machine, Klauder-Weldon Dyeing Machine Company, Yardley, Pa.
 One jig dyeing machine, the Textile-Finishing Machinery Company, Providence, R. I.
 One set of drying cans, the Textile-Finishing Machinery Company, Providence, R. I.
 One chain dyeing machine, T. C. Entwistle Company, Lowell, Mass.
 One raw stock drying table, Philadelphia Textile Machinery Company, Philadelphia, Pa.
 One padding mangle, Arlington Machine Works, Arlington, Mass.
 One hydro-extractor, W. H. Tolhurst & Son, Troy, N. Y.
 One experimental dyeing machine, the Psarski Dyeing Machine Company, Cleveland, Ohio.
 One experimental dyeing machine, equipped for raw stock or yarns, Hussong Dyeing Machine Company, Croweville, N. J.
 One sample piece dyeing machine, Rodney Hunt Company, Orange, Mass., equipped with an automatic temperature and pressure-regulating apparatus, made by C. J. Tagliabue Manufacturing Company, Brooklyn, N. Y.
 One laboratory dyeing machine, Franklin Process Company, Providence, R. I.
 Seven dye tubs and two trucks.
 The power for this section is supplied through a 15-horse power, 220-volt Allis-Chalmers motor, and speed can be controlled by a Reeves' variable speed device.

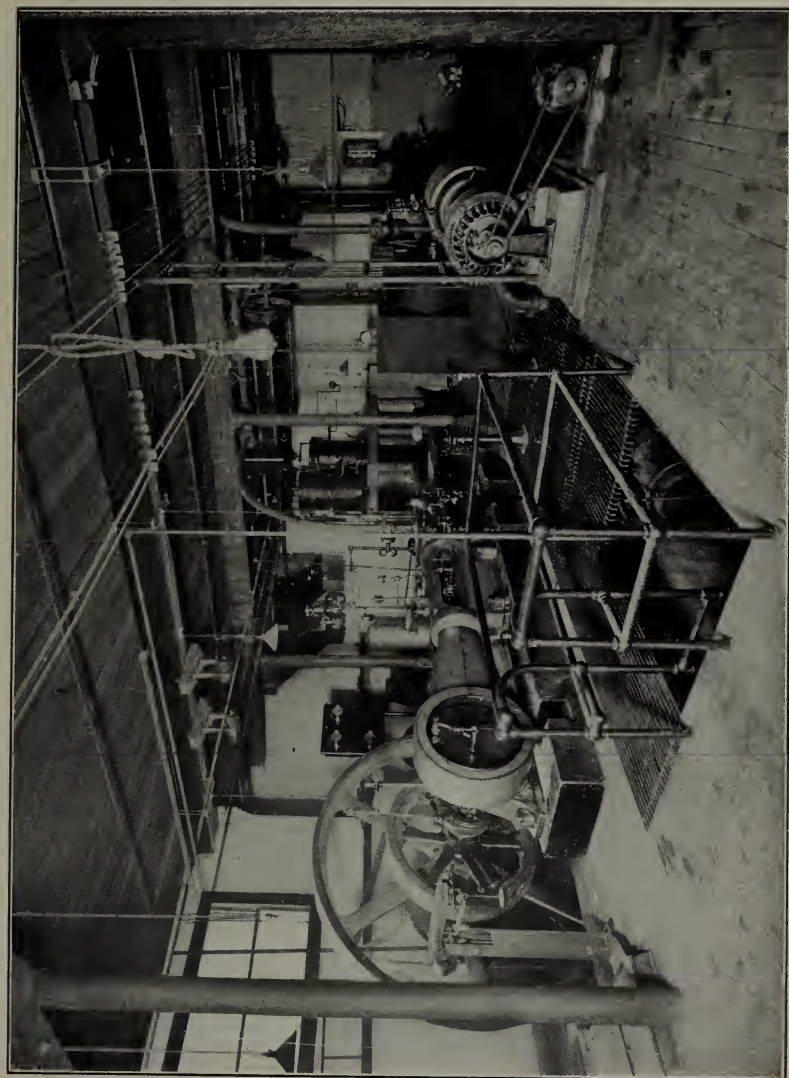
FINISHING DEPARTMENT.**Woolen and Worsted.**

One 2-string washer, Rodney Hunt Company, Orange, Mass.
 One fulling mill, Rodney Hunt Company, Orange, Mass.
 One sample fulling mill, James Hunter & Co., North Adams, Mass.
 One up and down dry gig, Curtis & Marble, Worcester, Mass.
 One rolling and stretching machine, Curtis & Marble, Worcester, Mass.
 One up and down wet gig, Curtis & Marble, Worcester, Mass.
 One steam finishing machine, Curtis & Marble, Worcester, Mass.

- One 60-inch, 3-burner singeing machine, adapted for cotton, silk or worsted goods, Curtis & Marble, Worcester, Mass.
- One 2-cylinder double-acting brushing machine, Curtis & Marble, Worcester, Mass.
- One 60-inch, 4-cylinder sanding and polishing machine, Curtis & Marble, Worcester, Mass.
- One kicker mill, James Hunter & Co., North Adams, Mass.
- One $\frac{5}{8}$ double shear, Parks & Woolson, Springfield, Vt.
- One single shear, Curtis & Marble, donated by Massachusetts Mohair Plush Company, Lowell, Mass.
- One dewing machine, G. W. Voelker & Co., Woonsocket, R. I.
- One $\frac{5}{8}$ Voelker rotary press, G. W. Voelker & Co., Woonsocket, R. I.
- One tentering and drying machine, John Heathcote, Providence, R. I.
- One single crabbing machine, H. W. Butterworth & Son, Philadelphia, Pa.
- One 72-inch woolen napper, Davis & Furber, North Andover, Mass.
- One 32-inch basket hydro-extractor, W. H. Tolhurst, Troy, N. Y.
- One A. W. C. measuring and weighing machine, Parks & Woolson, Springfield, Vt.
- One Lintz & Eckhardt cloth numbering machine, improved by Durbrow & Hearne Manufacturing Company, New York.
- One steam press for underwear, United States Hoffman Company, Syracuse, N. Y.
- One sewing machine, Birch Brothers, Somerville, Mass.
- Soap tanks, perch, burling and measuring tables.
- The power for this section is supplied through a 15-horse power, 220-volt Allis-Chalmers motor.

Cotton Finishing.

- One 40-inch inspecting and brushing machine, Curtis & Marble, Worcester, Mass.
- One 44-inch No. 25 railway sewing and rolling machine, Curtis & Marble, Worcester, Mass.
- One 44-inch cotton shearing machine, Type No. 34, Curtis & Marble, Worcester, Mass.
- One 44-inch No. 3 steam calender rolling machine, Curtis & Marble, Worcester, Mass.
- One 40-inch cloth folder, Curtis & Marble, Worcester, Mass.
- One 40-inch winder and measurer, Curtis & Marble, Worcester, Mass.
- One set 44-inch shear blades for grinding purposes, Curtis & Marble, Worcester, Mass.
- One 48-inch No. 4 opening, sewing and re-rolling machine, Dinsmore Manufacturing Company, Salem, Mass.
- One No. 1 hand power portable railway sewing machine, Dinsmore Manufacturing Company, Salem, Mass.
- One 40-inch, 3-roll water mangle, with husk and brass rolls and usual attachments, the Textile-Finishing Machinery Company, Providence, R. I.
- One 48-inch Mycock scutcher for the water mangle, Thos. Leyland & Co., Boston, Mass.
- One 40-inch Mycock cloth expander for the water mangle, Thos. Leyland & Co., Boston, Mass.
- One 40-inch, 2-roll starch mangle, the Textile-Finishing Machinery Company, Providence, R. I.
- One 40-inch upright drying machine with 10 copper cylinders, the Textile-Finishing Machinery Company, Providence, R. I. These are equipped with Files dry can system, Files Engineering Company, Inc., Bridgeport, Conn.
- One 16 by 24 inch bronze-covered stretcher for the drying cans, C. A. Luther & Co., Providence, R. I.
- One 40-inch double bristle stretcher for drying cans, American Finishing Machinery Company, Boston, Mass.
- One 40-inch sprinkler, the Textile-Finishing Machinery Company, Providence, R. I.
- One 40-inch, 5-roll Universal calender with chasing attachment, the Textile-Finishing Machinery Company, Providence, R. I.
- One 40-inch Mycock cloth expander for the calender, Thos. Leyland & Co., Boston, Mass.
- One 40-inch Tommy Dodd starch mangle, H. W. Butterworth & Sons Company, Philadelphia, Pa.
- One 44-inch, 50-foot vibratory tentering machine, H. W. Butterworth & Sons Company, Philadelphia, Pa. This machine is driven separately by a $7\frac{1}{2}$ -horse power variable speed, 220-volt, direct-current General Electric motor, and is equipped with the Schwartz automatic electric guider, made by L. H. A. Schwartz & Co., Boston, Mass.
- One pasting table with plate, the Textile-Finishing Machinery Company, Providence, R. I.
- Two copper steam jacketed starch kettles.
- The power for this section is supplied through a 25-horse power, 220-volt Westinghouse direct-current motor.



Engineering Laboratory.

ENGINEERING DEPARTMENT.

Steam Engineering Laboratory.

The Engineering Laboratory contains the following equipment:

50-horse power Allis-Chalmers Corliss steam engine (Reliance type) for experimental purposes, arranged to operate condensing or non-condensing, and direct connected to an Alden absorption dynamometer.

Wheeler surface condenser (200 square feet surface), with 5 by 6 by 6 by 7 inch combined air and circulating pump.

25-kilowatt Kerr steam turbine (7 stage), direct connected to 25-kilowatt Richmond Electric Company alternating current generator, and arranged for both condensing and non-condensing conditions. The piping is also arranged that this turbine may be run as a low-pressure turbine, in conjunction with the Allis-Chalmers engine. The generator is especially designed for experimental work with connections and windings for all the commercial phases.

5,000-gallon pressure tank for heads up to 300 feet and connections for experimental work. Two 2,500-gallon concrete storage tanks.

Complete set of weighing and suction tanks on Fairbanks Standard scales.

Deane triplex power pump, 4 by 6 inches.

One Hays flue gas collector and instruments for determination of CO_2 , O and CO.

One throttling calorimeter and one separating calorimeter, made by Schaeffer & Budenberg Manufacturing Company.

One 2-inch centrifugal pump, made by Lawrence Machine Company and direct connected to a 3-horse power General Electric 220-volt induction motor.

Miscellaneous equipment of pressure, vacuum and draft gauges, thermometers, etc.

Clayton air compressor (belted type), 6 by 6 inches.

Centrifugal pump, 2-inch (belted type), Lawrence Machine Company, Lawrence, Mass.

Two Sturtevant fan blowers for experimental work.

$\frac{1}{2}$ -inch Metropolitan injector and $\frac{1}{4}$ -inch ejector.

One Massachusetts motor-driven fan and heater combination, arranged for testing work on heating, drying, etc.

One Sturtevant engine-driven, induced-draft fan, connected for experimental work.

Differential transmission dynamometer.

Variable speed transmission.

One dead weight tester for calibrating pressure gauges.

One vacuum pump and mercury column for calibrating vacuum gauges.

Two steam engine indicators (inside and outside spring pattern) with reducing wheels and motions. Planimeters (plain and averaging types). Speed counters and tachometers.

One gas engine indicator. Apparatus for investigating the rate of heat transmission for steam-heating coils and condenser tubes.

All steam supplied to the laboratory passes through a 4-inch horizontal Cochrane steam separator to insure dry steam for experimental work.

Buff & Buff engineer's transit.

Philadelphia level rod.

Apparatus for testing friction and slip of belts and pulleys.

Electrical Engineering Laboratory.

Standard marine finished slate switchboard, made up of:

One Westinghouse alternating current generator panel, 25 kilowatts.

One Westinghouse alternating current generator panel, 15 kilowatts.

One circuit panel for lights and motors.

One 15-k. v. a., 220-volt, 3-phase, 60-cycle synchronous motor.

One 24-horse power, 220-volt, direct-current Allis-Chalmers motor.

One 10-horse power, 220-volt, direct-current General Electric compound wound motor.

One 7.5-horse power, 220-volt, 3-phase, 60-cycle General Electric induction motor.

One 10-horse power, 220-volt, 3-phase, General Electric induction motor.

One 4-horse power General Electric dynamometer, which may be used either as a rotary transformer or a double current generator. Receives or delivers through transformer 220-volt, 60-cycle, 3-phase on one side, and delivers or receives 220-volt direct current.

One 5-kilowatt, 220-440-volt transformer.

Westinghouse portable polyphase wattmeter with current transformers.

Three General Electric alternating current wattmeters.

Two General Electric alternating current ammeters.
 One General Electric alternating current voltmeter.
 Two 250-volt direct-current Weston portable voltmeters.
 One Weston direct-current portable millivoltmeter; 2 ampere and 20 ampere shunts for use with the above instrument.
 One 150-ampere direct-current Weston portable ammeter.
 Two Weston model 45 direct-current ammeters.
 Two Weston model 260 direct-current ammeters.
 One Weston model 260 direct-current voltmeter.
 One Thompson 50-ampere, 2-wire, 220-volt recording wattmeter, General Electric Company.
 One Weston Laboratory Standard voltmeter with multiplier to 600 volts.
 One small Wheatstone bridge with D'Arsonval wall galvanometer.
 One simple galvanometer.
 One Leeds & Northrup potentiometer No. 7551.
 One wall galvanometer, Leeds & Northrup, No. 2210, D'Arsonval type.
 One Wheatstone bridge, Leeds & Northrup, No. 4725A, with D'Arsonval galvanometer, Leeds & Northrup tripod type.
 One slide wire bridge, Leeds & Northrup.
 One portable galvanometer, No. 2323, Leeds & Northrup.
 One ohmmeter, Leeds & Northrup.
 One electro-dynamometer, Leeds & Northrup.
 One Weston Standard cell.
 Two tachometers.
 One potential phase shifter, made by States Company, Hartford, Conn.
 One standard Leeds & Northrup photometer with Lummer-Brodhun screen compound rotator and rotating sector, screens, etc.
 One Macbeth illuminometer, Leeds & Northrup.
 One Esterline portable curve drawing wattmeter designed for polyphase alternating-current or direct-current power measurements. Mechanism to vary speed of paper.
 Two hand feed arc lamps for stereopticons.
 Resistance boxes of various sizes and other apparatus necessary for commercial testing of lamps, motors, etc.
 2-cell storage battery for constant voltage current supply.
 An exhibition board containing samples of the Exide storage battery plates donated by the Electric Storage Battery Company of Philadelphia.
 Miscellaneous apparatus for experiments in mechanics, heat, light, sound and electricity.

Machine Shop.

The equipment of the machine shop is as follows:

Four standard engine lathes, 13-inch swing, 6-foot bed, from Flather & Co., Nashua, N. H.
 Three standard engine lathes, 14-inch swing, 6-foot bed, from Flather & Co., Nashua, N. H.
 One standard engine lathe, 15-inch swing, 6-foot bed, from F. E. Reed Company, Worcester, Mass.
 One engine lathe, 18-inch swing, 10-foot bed, from Flather & Co., Nashua, N. H.
 One engine lathe, 18-inch swing, 6-foot bed, from Champion Tool Works, Cincinnati, Ohio.
 One standard engine lathe, 15-inch swing, 6-foot bed, from S. H. Putnam Sons, Fitchburg, Mass.
 Five speed lathes, 17-inch swing, 5-foot bed, from J. G. Blount, Everett, Mass.
 One No. 1 Universal milling machine, with all three feeds automatic, from Kempsmith Manufacturing Company, Milwaukee, Wis.
 One 24 by 24 inch, 6-foot planer, from the Mark Flather Planer Company, Nashua, N. H.
 One 23-inch upright drill, with back gears and power feed, from J. E. Snyder & Son, Worcester, Mass.
 One 14-inch single sensitive drill, from the Stanley Manufacturing Company, Lawrence, Mass.
 One No. 1 Universal grinder, from Landis Tool Company, Waynesboro, Pa.
 One 20-inch wet tool grinder, from J. G. Blount, Everett, Mass.
 One 12-inch, 2-wheel dry grinder, from J. G. Blount, Everett, Mass.
 One American twist drill grinder, from the Heald Machine Company, Worcester, Mass.
 One Type 1B portable electric grinder, from the Cincinnati Electric Tool Company, Cincinnati, Ohio.
 One 30-inch grindstone and frame, from the Athol Machine Company, Athol, Mass.
 One single spindle centering machine, from D. E. Whiton Machine Company, New London, Conn.



Athletic Field and School Buildings.

- One 15-inch shaper, from Potter & Johnson, Pawtucket, R. I.
- One power hack saw, from the Fairbanks Company, Boston, Mass.
- One cold saw, from John T. Burr & Son, Brooklyn, N. Y.
- Two blacksmith forges, anvils and tools.
- One gas oven for hardening and tempering tools.
- One Eureka metal power saw, Manning, Maxwell & Moore.
- One Type CC electric drill, Cincinnati Electric Tool Company.
- One Universal milling attachment for Kempsmith milling machine, Taylor Machinery Company.
- One Hisey Type B $\frac{1}{4}$ -horse power tool post grinder, Taylor Machinery Company.
- One No. 2 Cory bench straightener, Manning, Maxwell & Moore.
- One No. 3 Universal cutter and reamer grinding machine, Brown & Sharpe.
- (These machine tools are fully equipped with chucks, centers, tools, etc., for a great variety of work. Benches with vises are also provided for such work as chipping, filing, etc.)
- A well-equipped tool room containing a selected stock of the best makes of small tools, such as drills, taps and dies, milling cutters, reamers, gauges, micrometers, etc.
- The following woodworking tools are also provided in addition to benches for pattern making:
 - One pattern maker's lathe, 16-inch swing, 8-foot bed, from Fay & Scott, Dexter, Me.
 - One 32-inch band saw, from the Crescent Machine Company, Leetonia, Ohio.
 - One iron single saw bench, from the Crescent Machine Company, Leetonia, Ohio.
 - One double saw bench.
 - One 12-inch buzz planer, from W. W. Carey, Lowell, Mass.
- The power for the machine shop is supplied through a 10-horse power, 220-volt direct-current Allis-Chalmers motor.

Power, Light, Heat and Ventilating Plant.

- In the new power house, completed in 1913, there is located the main power-generating apparatus for supplying light, heat and power to all departments of the school. The equipment here consists of:
 - Two 250-horse power Heine water tube boilers, equipped with Perfection grates.
 - One 300-horse power Aultman & Taylor horizontal water tube boiler, equipped with United States rocking grates.
 - One Knowles boiler feed pump, 6 by 4 by 6.
 - One Deane boiler feed pump 6 by 4 by 6.
 - All feed water is heated and measured by a 30,000-pound Cochrane metering open-feed water heater, which is provided with a Lea recorder and a Cochrane oil extractor. Harrison Safety Boiler Works, Philadelphia, Pa.
 - One 3-inch Venturi meter in feed line with indicating manometer, Builders Iron Foundry, Providence, R. I.
- In the Engine Room are located:
 - One Payne 14 by 14 automatic high speed engine, 125-horse power direct connected to 75-kilowatt, 220-volt, direct-current Bullock generator.
 - One 9 $\frac{1}{2}$ by 11 $\frac{1}{4}$ Nash gas engine of 50-horse power, 4-cycle type, with speed-regulating clutch and a "hit and miss" governor. Direct connected to a 30-kilowatt, 220-volt, direct-current Bullock generator.
 - One steam-driven Ingersoll-Rand 8 by 8 air compressor, for use with Tarbo heads, installed in the French Spinning Department by the G. M. Parks Company, Fitchburg, Mass.
 - One 5 $\frac{1}{2}$ by 6 motor-driven air compressor, with 20 cubic foot storage tank for use in starting Nash gas engine.
 - One Cross oil filter.
- The station switchboard is of marine-finished slate, 90 inches in height, and consists of two generator panels and one circuit panel. From this lead circuits supplying approximately 1,200 16-candlepower equivalent lamps, and over 270 horse power in motors, located in various departments of the school.
- The power house is connected with the main school buildings by a tunnel through which all wires, steam and water pipes are carried. The steam pipes supply heat to the buildings by means of direct radiation, and by means of the Sturtevant double duct heating and ventilating system located in the basement of Southwick Hall, and by the Sturtevant fan and heater located in the basement of Kitson Hall. Direct-driven exhaust fans are placed on the roof of Southwick Hall and in the basement laboratories.
- The humidity of the Spinning and Weaving Department is provided by the American Moistening Company's system, including 12 heads, a Knowles triplex 4 by 4 power pump and tank.

ATHLETICS.

Through the generosity of Mr. Frederick Fanning Ayer the school has been provided with a campus and athletic field of about 3 acres. This has been carefully graded and laid out for baseball, football and track athletics.

To enclose this field the Alumni Class Fence has been partly built. It is made of forged iron sections supported between brick columns. Each section is contributed by a class, so that in the course of a few years this fence will entirely enclose the field.

On the upper floor of the Falmouth Street Building there has been provided a recreation room for the use of the students at such times as their attendance is not required in classes. This room is also used by those who take part in athletics, and connected to it is a smaller room provided with shower baths.

The upper hall of Southwick Hall has been equipped with gymnastic apparatus. Chest weights, wooden dumb-bells, Indian clubs, a set of traveling rings, a vaulting horse, parallel bars, a punching bag and several sets of foils and single sticks have been provided.

In order to be sure that no student having any dangerous physical weakness takes part in any athletic contest, all candidates for the various athletic teams are obliged to pass a satisfactory physical examination.

DAY CLASSES.

ENTRANCE REQUIREMENTS.

Degree Courses.

Candidates for admission to either of the degree courses must be graduates of a school approved by the New England College Entrance Certificate Board or by the Board of Regents of New York, and must present a certificate from the principal of the school last attended, reporting upon the subjects pursued and the points obtained according to the schedule of studies given hereafter. A total of fourteen points is required.

A point represents satisfactory work in a year's study in a specified subject in an approved secondary school.

Required Subjects.

	Points.
Plane Geometry,	1
Algebra A1,	1½
Algebra A2,	½
Elementary German A (two years) or Elementary French A (two years) }	2
English,	3
History (American, Mediæval and Modern or English),	1
	9

Elective Subjects.

Physics,	1
Chemistry,	1
Solid Geometry,	1
Trigonometry,	½
Mechanical Drawing,	1
Mechanic Arts,	1
History:	
American,	1
Mediæval and Modern,	1
English,	1
Elementary French (two years) or Elementary German (two years) }	2
Advanced French or German (one year in addition to requirements of Elementary French A or Elementary German A),	1
Spanish,	1
English,	1

An applicant may also be admitted on the basis of entrance examinations, in which case he must pass a sufficient number of the required subjects to make nine points, and present certificates showing satisfactory courses in such of the elective subjects to make five additional points.

The object of the elective requirements is to encourage greater breadth of preparation than that covered by the required branches. Certificates covering other subjects than those listed as elective will be entertained.

Diploma Courses.

Candidates for admission to the diploma courses are accepted upon presentation of properly vouched certificates showing the completion of a regular four-year course in a high school or academy of reputable standing. The certificates must specify that the applicant has satisfactorily passed the necessary subjects.

A total of nine points selected from the following list of subjects is required, and no applicant for a diploma course can be accepted unless he presents in his certificate at least one year of algebra, one year of plane geometry and three years of English. An applicant is advised to complete both Algebra A1 and A2 before entering.

The subject-matter covered should be the same as described under the required subjects for the degree courses, with the exception of German and French, the requirements for which are given specifically under Elementary German B and Elementary French B.

	Points.
Algebra A1,	1½
Algebra A2,	½
Plane Geometry,	1
English (three years),	3
English (additional year),	1
German, Elementary (one year),	1
French, Elementary (one year),	1
History:	
Mediæval and Modern,	1
English,	1
American,	1

ENTRANCE EXAMINATION.

All students who are unable to present a certificate for either the degree or diploma courses must pass entrance examinations. The examinations for admission to the diploma and degree courses will be held as follows: —

Wednesday, June 18, 1919; Tuesday, September 9, 1919; Tuesday, June 15, 1920:

Algebra, 9 A.M. to 11 A.M.

History, 11 A.M. to 1 P.M.

English, 2 P.M. to 4 P.M.

Thursday, June 19, 1919; Wednesday, September 10, 1919; Wednesday, June 16, 1920:

Plane Geometry, 9 A.M. to 11 A.M.

German or French, 11 A.M. to 1 P.M.

Candidates failing to pass the June examinations are allowed to try again in September; those who cannot attend the June examinations may present themselves in September.

REQUIRED SUBJECTS FOR ENTRANCE.

Algebra.

ALGEBRA A1. — Fundamental operations, factoring, determination of the highest common factor and least common multiple, fractions, simple and complex, simple equations of one or more unknown quantities, problems involving linear equations of either numerical or literal quantities, radicals,



Organic Chemistry Laboratory.

involution and evolution, square and cube root, ratio and proportion, exponents including fractional and negative.

ALGEBRA A2. — Quadratic equations both numerical and literal. Simple problems involving one or more unknown quantities that may be solved by the methods of linear or quadratic equations, binomial theorem for positive integral exponents, problems involving methods of arithmetical and geometrical progressions.

Plane Geometry.

The usual theorems and constructions of good textbooks, including the general properties of plane rectilinear figures, the circle and the measurement of angles, similar polygons, areas, regular polygons, and the measurement of the circle. The solution of original problems and problems in mensuration of lines and plane surfaces.

English.

As secondary schools are following to a greater extent than heretofore the requirements of the College Entrance Examination Board, it is recommended that the applicant to this school conform to the suggestions of this Board relative to English composition and literature.

The examination consists of two parts, both of which are given at the same time.

(a) With the object of testing the student's ability to express his thoughts in writing clearly and correctly he will be required to write upon subjects familiar to him. Emphasis will be laid upon the composition, punctuation, grammar, idiom and formation of paragraphs. He will be judged by how well he writes rather than by how much he writes.

(b) The second part of the examination is prepared with the view of ascertaining the extent of the student's knowledge of good literature, and to test this examination questions will be based on the books adopted by the National Conference on Uniform Entrance Requirements. Any course of equivalent amount if made up of standard works will be accepted.

Modern Languages.

REQUIREMENTS FOR DEGREE COURSES.

It is expected that the work in these subjects has covered a period of at least two years of preparatory school training or the equivalent. Importance should be given to the ability to translate into good idiomatic English, but attention should also be paid to grammar and construction, that greater care may be used in translation.

ELEMENTARY GERMAN A. — The entrance examination is composed of two parts, both taken, however, at the same time.

(a) Translation of simple German prose into good idiomatic English.

(b) Questions to test proficiency in grammar, and simple English sentences to be rendered into German.

The requirements include the declension of articles, adjectives, pronouns and nouns; the conjugation and inflection of weak and strong verbs; the simpler uses of the subjunctive; the use of the modal auxiliaries; the prepositions and their uses; the principal parts of important verbs; and the elementary rules of syntax and word order.

Texts used in the language courses of any reputable high or preparatory

school will furnish reading for translation. A list of texts is offered by the College Entrance Examination Board.

ELEMENTARY FRENCH A. — The entrance examination is composed of two parts, both taken, however, at the same time.

(a) Translation of simple French prose into good idiomatic English.

(b) Questions to test proficiency in grammar, and simple English sentences to be rendered into French.

The requirements include the principal parts, conjugation and inflection of the regular and the more common irregular verbs; the singular and plural forms of nouns and adjectives; the uses of articles and partitive construction; the forms and positions of personal pronouns; and the simpler uses of the conditional and subjunctive.

Suitable texts are suggested by the language courses of any reputable high or preparatory school and by the requirements of the College Entrance Examination Board.

Note. — Students who have pursued two years of elementary French as well as two years of elementary German may present one subject to cover two points in the required subjects, and the other to cover two points in the elective subjects.

REQUIREMENTS FOR DIPLOMA COURSES.

ELEMENTARY FRENCH B. — Applicants who enter for one of the three-year courses may present one year's work in French in a secondary school. Those who present themselves for examination in this subject should be familiar with the rudiments of grammar, and be able to translate simple French prose into good idiomatic English, also to translate into French English sentences based on the French given for translation.

ELEMENTARY GERMAN B. — Applicants who enter for one of the three-year courses may present one year's work in German in a secondary school. What is stated in regard to French applies to those who may present German instead of French.

History.

Applicants may offer a preparation of American history, English history or mediæval and modern history.

In American history applicants should be familiar with the early settlements in America, the colonies, their government, the customs of the people, and events which led to the establishment of the United States. They should be informed concerning the causes and effects of the principal wars in which the country has been involved. They should be prepared to consider also questions requiring an elementary knowledge of civil government, as well as historical facts connected with the growth of this country up to the present time.

For the subject of English history or mediæval and modern history the course given in any reputable secondary school should give proper preparation. A course extending over a full year with not less than three periods a week will be accepted.

ELECTIVE SUBJECTS.

History.

If the applicant can present all three or any two branches of history specified he may include one as a required subject and the others in the list of elective subjects.

Physics.

The applicant should be familiar with the fundamental principles of physics, particularly those considered under the headings of mechanics, heat, light, electricity and magnetism. Textbook instructions should be supplemented by lecture table experiments. Wherever possible, the student should pursue a laboratory course, but for the present no applicant will be conditioned in this subject if he has not been able to carry on a laboratory course. Where a laboratory course is offered by a secondary school, it should cover at least twenty-five of those experiments listed in the syllabus of the College Entrance Examination Board. An applicant should present his notebook, together with the certificate from the teacher under whom the work was performed.

Chemistry.

Applicants must show evidence of their familiarity with the rudiments of chemistry. Any course given in a secondary school organized to present instruction by means of textbook or lecture, together with correlated laboratory work, will be considered as covering the requirements. The applicant's notebook with his original notes, including description of experiments, apparatus used, reactions, observations and deductions, must be accompanied by his instructor's certificate.

Importance will be placed upon manipulation and deductions as well as the general appearance and neatness of the notebook.

Solid Geometry.

The usual theorems and constructions of good textbooks, including the relations of planes and lines in space, the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and spherical triangles. The solution of original problems and the applications of the mensuration of surfaces and solids.

Trigonometry.

The usual courses of instruction covered by the standard textbooks on plane and spherical trigonometry will prepare an applicant sufficiently to meet this requirement.

Mechanical Drawing.

The applicant must have pursued such a course in mechanical drawing that he will be familiar with the usual geometrical construction problems, projection of points, lines, planes and simple solids.

Importance is laid not only upon the accuracy with which the work is performed, but upon the general arrangement, appearance and care with which the plates are executed.

It should not be understood that work in this subject may be offered as the equivalent of the first term's work at the school.

Mechanic Arts.

The usual courses offered by properly equipped preparatory schools will be accepted as suitable fulfillment of this requirement. Work should include instruction in the handling of both wood and metal working tools in the more simple practices of these arts.

Advanced French or German.

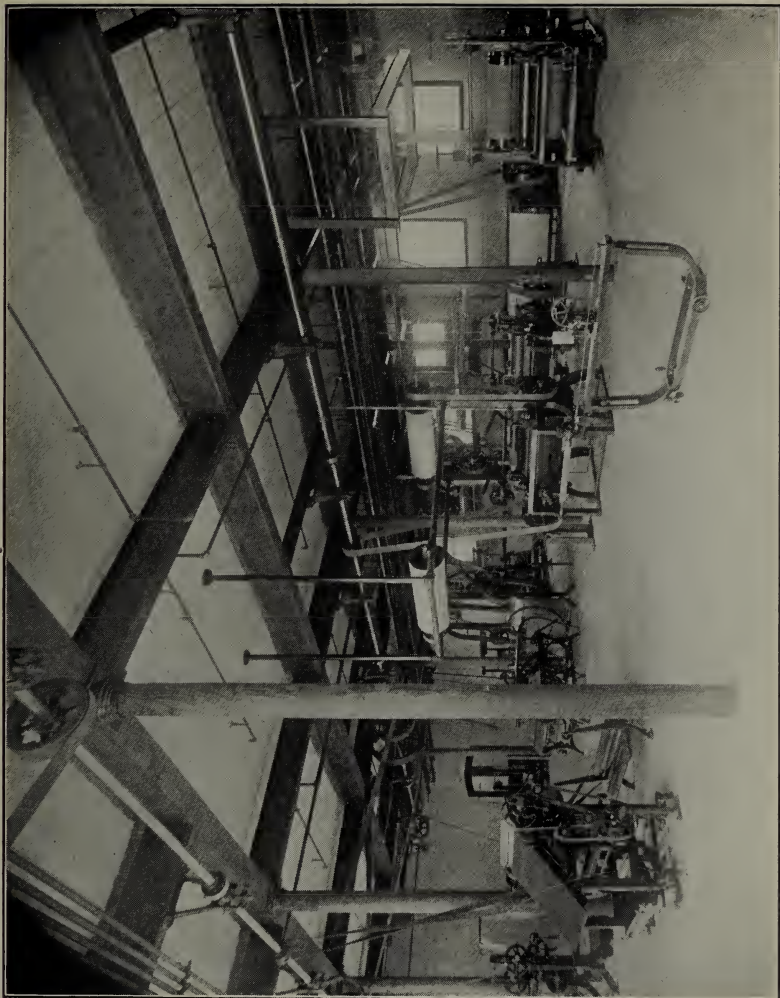
In cases where applicants have pursued courses in French or German for more than two years, and have completed work which is more advanced than is included under elementary French or German, they may offer the additional year as an elective.

English.

In many secondary schools this subject is required during all of the four years, and where it is pursued to this extent the applicant may offer the additional year's work as one of his elective subjects.

Spanish.

Students offering Spanish should be familiar with elementary grammar, the common irregular verbs, and be able to translate simple Spanish to English or English to Spanish. A preparation equivalent to three periods per week for two years will be acceptable.



Cotton Finishing.

GENERAL INFORMATION.

Preparation.

Particular stress should be laid upon a thorough grounding in mathematics, including algebra, arithmetic and plane geometry, as these form the basis upon which the work of this school rests. While solid geometry is not required at the present time, the student will find a knowledge of this subject very valuable in his subsequent work, and is strongly recommended to include this subject as one of his electives. A preliminary course in science, including physics and chemistry, serves to prepare the student's mind for the higher branches of these subjects and their application, but neither will be considered as the equivalent of the courses in these branches given in the school.

Advanced Standing.

Candidates who may have received previous training in any of the subjects ordinarily taken in the regular course may present themselves for examination as per calendar. If a satisfactory rank be attained they may elect such further work as their preparation will permit.

Attendance Card.

At the beginning of each term all students must fill out and file with the president, on blank forms which are provided, a formal application for such subjects as are required in his course and for which he is sufficiently prepared, subject to the approval of the president. When an attendance card is once approved, no change can be made except through the president.

Application Blanks.

A blank form of application for admission may be found at the end of this bulletin. This should be properly filled out by all applicants, whether entering upon certificate from a secondary school or presenting themselves for examination.

Fees.

The fee for the day course is \$150 per year for residents of Massachusetts. For non-residents the fee for all courses is \$200 per year. The fee for students from foreign countries is \$300 per year.

Three-fifths of the fee is charged for a single term. The first term's tuition is payable on or before October 10, the balance on or before February 10, of each year. *No bills will be sent.* After payment is made no fee or part thereof can be returned, except by special action of the trustees.

An athletic fee of \$5 is due and payable at the time of the first payment of tuition.

Special students pay, in general, the full fee, but if a course be taken involving attendance at the school during a limited time, application may be made to the president for a reduction.

Students must provide their own books, stationery, tools, etc., and pay for any breakage or damage that they cause. The above fee includes free admission for any day students desiring to attend any of the evening classes in which there is accommodation.

For all first-year students a minimum deposit of \$20 is required to cover the cost of breakage, supplies, and apparatus and chemicals used in the Chemical Laboratory, the unexpended balance to be returned to the student at the end of the year.

For all students in second, third and fourth years taking work in Chemistry and Dyeing Laboratories a deposit of \$20 for the first term and \$20 for the second term is required. The unexpended balance will be returned at the end of the year.

Fees are strictly payable in advance, and students whose fees remain unpaid after the above-mentioned dates will not be admitted to classes.

All deposits must be made before students can be admitted for laboratory work.

Examinations.

Intermediate examinations are held every five weeks, and these serve to inform the student concerning his standing and the progress made.

Formal examinations are held at the end of each term.

In general, the examinations cover the work of the preceding term, but at the discretion of the instructor may include work of earlier terms.

Examinations for students conditioned in first-term subjects are held in May, and examinations for students conditioned in the final examinations are held in September following.

If a student fails to clear a condition at the time appointed, he will be required to repeat or drop the subject; and he cannot be admitted to subjects dependent thereon.

Daily work and regularity of attendance are considered in making up the reports of standing.

Continued or persistent absence or tardiness from the classes is considered reason to exclude a student from the class.

Records and Reports of Standing.

Twice during each term informal reports are sent to all parents or guardians and to students who are of age; and at the end of each term formal reports are made.

The daily work of the student forms an important part of his record, and no pupil will be awarded the diploma or degree unless this portion of his record is clear.

Books are prescribed for study, for entry of lecture notes and other exercises, and are periodically examined by the lecturers. The care and accuracy with which these books are kept are considered in determining standing.

Thesis.

Each candidate for the degree of the school must file with the head of the department in which the thesis is taken, and not later than May 15, a report of original investigation or research, written on a good quality of paper, 8 by 10 inches, with 1-inch margin at left, and one-half inch at right, of each page; such thesis to have been previously approved by the head of the department in which it is made.

For all candidates for the diploma this requirement will be optional on the part of the school.

Graduate Course.

Graduates of technical courses of other schools are invited to communicate with the president with reference to special courses in the textile studies. Previous training in the sciences and the engineering branches will usually reduce materially the time necessary to complete any of the courses at this school. The advantages offered to such persons for special research work are unexcelled, and a most profitable course may be arranged.

Partial Courses.

While it is assumed that in general every student will pursue some one of the regular courses, it is recognized that there may be some who, because of special vocations or limited time, desire to obtain instruction in certain particular subjects. Facilities and special courses will be provided for such applicants within the limits of schedule arrangements and required preparation. For subjects and preparation see page 54.

Applicant must present satisfactory evidence, by examination or otherwise, that he is qualified to pursue with profit the subjects chosen.

For a number of years the school has had students who have specialized in textile design, decorative art, cloth analysis, weaving and finishing. While no specified limit is given for this course the usual time has been three years. It is expected that a student taking this course will devote all of the regular school session to these subjects, and failure to attend, continued tardiness, lack of application or progress will be considered sufficient reasons to demand his withdrawal from the school.

Special Awards of Merit.

For several years a friend of the school has offered prizes in the form of books to be awarded to the successful candidates on graduation day. The prizes are continued each year. The conditions in detail are as follows:—

First.—Ten dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship in first-year chemistry.

Second.—Five dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship in first-year chemistry.

Third.—Ten dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during his second year.

Fourth. — Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during his second year.

Fifth. — Twenty dollars to the regular student in the Chemistry and Textile Coloring Course who shall present the best thesis preparatory to graduation.

The above-mentioned sums are to be invested in books which may be selected after graduation. In case no one is considered worthy of any particular scholarship prize, or if there is no competition, the same may be withheld. The decision in such case shall rest with the judges.

Degrees.

The degree of Bachelor of Textile Engineering will be awarded for the completion of the four-year course in textile engineering. The degree of Bachelor of Textile Chemistry will be awarded for the completion of the four-year course in chemistry and textile coloring.

Diploma.

For the present the diploma of the school will be awarded upon the satisfactory completion of any one of the regular three-year courses. In cases where students obtain advanced standing, at least one year's attendance is required before the diploma can be obtained.

Medals of Honor.

The National Cotton Manufacturers' Association offers annually a medal to that member of the graduating class who shall have during his course attained the highest standing in the special subjects required by the vote of the association.

Attendance.

All regular students must attend all exercises of their course. Special students must attend exercises as per their tabular view.

Department heads, together with such instructors as they may appoint to assist, constitute a board of advisers for those students assigned to each. This is for the purpose of following more closely the work of each individual student, and of giving such personal help and assistance as is possible.

If a student is absent from any one of his classes twice during a term he is reported to his adviser, and if he is reported a second time he is called before the faculty and a report sent to his parent or guardian. Any occasion for a subsequent report of non-attendance to the adviser from any instructor will be considered sufficient reason for suspension from school.

Conduct.

Students are required to return to the proper place all instruments or apparatus used in experimental work, and to leave all machinery and apparatus with which they may experiment clean and in working order. All breakages, accidents or irregularities of any kind must be reported immediately to the head of the department or instructor in charge.

In case of either day or evening students, irregular attendance, lack of punctuality, neglect of either school or home work, disorderly or ungentele-



Machine Shop.

manly conduct or general insubordination are considered good and sufficient reasons for the immediate suspension of a student, and a report to the trustees for such action as they deem necessary to take.

It is the aim of the trustees so to administer the discipline of the school as to maintain a high standard of integrity and a scrupulous regard for trust. The attempt of any student to present, as his own, work which he has not performed, or to pass any examination by improper means, is regarded by the trustees as a most serious offence, and renders the offender liable to immediate suspension or expulsion. The aiding or abetting of a student in any dishonesty is also held to be a grave breach of discipline.

Any student who violates these provisions will be immediately suspended by the president, and the case reported at the following meeting of the trustees for action.

Library and Reading Room.

That the students may have surroundings conducive to reading and study a moderate-sized reading room with library tables and chairs has been provided. The library shelves contain textile, art, engineering and scientific publications. These are increased from time to time as new technical books of value to textile students are issued from the press. The leading textile papers are kept on file for ready reference.

Sessions.

The regular school sessions are in general from 8.45 A.M. to 12.45 P.M., and from 2 to 5 P.M., except Saturdays, when there is no session of the school. On Saturday afternoons the buildings are closed.

A tabular view designates the hours at which the various classes meet. This is rigidly adhered to, and the student is marked for his attendance and work as therein scheduled.

Residence and Expenses.

Students from a distance, requiring rooms and board in the city, may, if they desire, select the same from a list which is kept at the school. The cost of rooms and board in a good district is from \$9 per week upwards.

All raw stock and yarn provided by the school, and all the productions of the school, remain, or become, the property of the school, except by special arrangement; but each student is allowed to retain specimens of yarn or fabrics that he has produced, if mounted and tabulated in accordance with the requirements of the school. It is understood that the school may retain such specimens of students' work as they may determine.

Lockers are provided for the use of the students, sufficiently capacious to contain clothing, books and tools. Special keyless padlocks are provided, and the student is required to make a deposit of 75 cents. At the end of the year 50 cents will be returned if the locker and lock are surrendered in good condition.

No books, instruments or other property of the school are loaned to the students to be removed from the premises except by special permission.

Awards.

Gold medal, Paris Exposition, 1900, for general excellence. A special medal, Merchants and Manufacturers Exposition, Boston, 1900. The Pan-American medal, awarded to the school, 1901. Gold medal, Louisiana Purchase Exposition, 1904. Gold medal, Lewis and Clark Centennial Exposition, 1905. Medal of honor from Panama-Pacific International Exposition, 1915.

Bulletins and Catalogues.

All students registering and paying the regular fee for the course selected are entitled to the bulletins and catalogues when issued.

COURSES OF INSTRUCTION.

Since its establishment the Lowell Textile School has offered courses, each of which extends over a three-year period. With the development of the school and close study of the problems presented to the graduates it has been believed that attention should be given those branches of instruction which would give breadth of training as well as establish fundamental principles. This policy has resulted in extending the curriculum to such length that the need for an additional year's instruction was evident.

The fact was also appreciated that to carry on the more advanced work a better preparation must be demanded of the applicant for entrance.

Nevertheless, it was recognized that many young men seeking employment in the textile industry do not care, or are not in a position, to devote four years to scholastic preparation, and for these the regular three-year courses are offered.

These courses are designated as Cotton Manufacturing, Wool Manufacturing and Textile Design (General Textile Courses).

At the completion of any one of these the regular diploma of the school is awarded.

In general, it is assumed that students pursuing these courses will not take the advanced work of the fourth year. However, if a student electing one of the three-year courses desires to change to one of the four-year courses he may do so providing his preparation and undergraduate standing permits of it.

The four-year courses are Textile Engineering, Chemistry and Textile Coloring. At the completion of these courses the degrees of Bachelor of Textile Engineering (B.T.E.) and Bachelor of Textile Chemistry (B.T.C.) are conferred.

Three options are offered in the Engineering Course, viz., general textile, cotton manufacturing or wool manufacturing. Each of these courses is planned to train one in the fundamental principles of science found to be applicable in the particular fields of textile chemistry and textile engineering. It is maintained that for one to be successful in either of these important branches of industry a training is required as thorough and broad as that of any of the recognized branches of engineering or of applied science.

With this in mind these courses have been built of a secure framework of science and mathematics, and to it has been added the useful application of these branches in the broad textile field. With the direct purpose of laying a secure foundation in the training, a more extended preparatory course is first demanded, and subsequently in the school work more subjects of a general character are included, that narrowness of judgment and observation may not result by overstimulation of the technical development.

COURSES FOR WOMEN.

Although all classes are open to women, the courses which have appealed especially to their tastes have been textile designing and decorative art. Some have pursued courses in chemistry, and have added to their work in design some instruction in power weaving and finishing. These special courses have in general been followed for three years, and in some cases have led the students to positions either in the mill office or in some commercial lines that have been desirable and have offered congenial work.

Within the last few years the possibilities for women in certain branches of textile chemistry have become recognized, and it is believed that in the future the positions open to them will become more and more numerous.

GOVERNMENT POSITIONS.

One of the significant and important facts that has been clearly demonstrated during the recent conflict is the great value of a technical education. In no war has the applied science been so forcefully used as a weapon of combat.

Our last catalogue pointed out the calls that the various departments of the government were making for graduates from this school in common with those of other technological institutions. The success attained by past students has been presented in a previous bulletin. As these men have shown their value to the government in times of war, so will they in times of peace. Before the war various departments of the government had found need for graduates from this textile school, and with the problems of peace the need undoubtedly will become greater.

The United States Civil Service Commission recognizes graduates from the degree courses of this school as proper applicants for the examination to the various positions requiring a knowledge of applied science and engineering, as well as a knowledge of textile manufacturing, in the different departments of the government.

COURSES.

In the column headed "Hours of Exercise" the numbers represent for each particular subject the total hours required in school for a period of fifteen weeks.

The letter and number which follow the subjects indicate the department in which the subject is given and the number of the subject in that department. For detailed description of the same, see page 54.

The departments are indicated as follows:—

Textile Engineering,	B	Cotton Yarns,	F
Chemistry and Dyeing,	C	Woolen and Worsted Yarns,	G
Textile Design and Power Weaving,	D	Finishing,	H
Languages and History,	E	Physical Culture,	I

By referring to the letter and number indicated under "Preparation" the student can ascertain what subjects are necessary in order that he may have a clear understanding of the subject which he is scheduled to take.

FIRST YEAR.

First Term.

[Common to all courses.]

	Hours of Exercise.
Mechanism B-3,	60
Mechanical Drawing B-7,	90
Mathematics B-1,	45
Textile Design D-1,	75
Elementary Chemistry C-1,	165
English E-1,	30
Elementary German E-2 or Elementary French E-4,	30
Physical Culture I-1,	30

Second Term.

	Course VI-4	Course IV-4
Mechanism B-3,	45	45
Mechanical Drawing B-8 and B-9,	90	30
Mechanical Laboratory B-6,	45	—
Mathematics B-1,	45	45
Textile Design D-1,	60	30
Elementary Chemistry C-1,	75	75
Technology of Fibers F-1 and G-1,	60	60
English E-1,	30	30
Elementary German E-2 or Elementary French E-4,	30	30
Physical Culture I-1,	30	30
Qualitative Analysis C-2,	—	120
Stoichiometry C-3,	—	30

For second-term subjects in Courses I., II. and III., see pages 43, 45, 47.

Course I. — Cotton Manufacturing.

The Cotton Manufacturing Course is designed for students contemplating a career in the manufacturing of cotton yarns and cloth or allied industries, and who wish to devote but three years to the school work.

During the first term the studies are common to all courses, and include instruction in mechanism, mathematics, mechanical drawing, textile design and elementary chemistry. Laboratory work supplements the lectures in chemistry, and hand-loom weaving assists in illustrating the principles of textile design. At the commencement of the second term instruction in the preliminary processes of yarn manufacturing is given.

The work in the Cotton Yarn Department comprises instruction in all the manufacturing processes from the bale to the finished yarn. The instruction is given by means of lectures upon the machines and processes, and by laboratory work upon the machines themselves. In the laboratory each student is required to make exhaustive tests upon each machine, and to make as many settings and adjustments as possible. The third year's work in this department is largely devoted to lectures upon the manufacture of specialties, waste products, etc., and special laboratory work, special tests upon yarns and fabrics, mill planning with regard to the arrangement of machinery, and other work of an advanced nature.

The course in chemistry consists of lecture and laboratory work on inorganic and organic chemistry, followed by instruction in textile chemistry and dyeing, including a short course in the Dyeing Laboratory.

The work in mechanism serves as a basis for all future machine and mechanical work, and is followed by steam engineering, electricity and mill engineering. The mechanical drawing taken in connection with these subjects augments this instruction as well as provides opportunity for students to become skilled in drafting.

The course in textile designing, cloth analysis and cloth construction includes lectures on plain and fancy weaves and Jacquard work, the analysis of all commercial fabrics, and designs for the same. During the third year of this course students in this department specialize on cotton fabrics.

Power weaving is taken up during the second and third years. Commencing with lectures and practice upon plain looms, the student is taken through dobby and box-loom weaving and Jacquards.

A course in knitting taken during the third year includes the manufacture of hosiery and underwear. There is also a course on the finishing of cotton fabrics, which is given by lectures and laboratory work.

For detailed description of the subjects see page 54.

Course I. — Cotton Manufacturing.

[For first term see page 41.]

FIRST YEAR.

Second Term.

	Hours of Exercise.		Hours of Exercise.
Mechanism B-3,	45	Elementary Chemistry C-1,	75
Mechanical Drawing B-8,	90	Elementary German E-2 or }	30
Mathematics B-1,	45	Elementary French E-4, }	30
Textile Design D-1,	120	Physical Culture I-1,	30
Technology of Fibers F-1,	60	English E-1,	30

SECOND YEAR.

First Term.

Cotton Yarn Manufacture F-1,	240	Machine Drawing B-10,	30
Textile Design D-2,	60	Steam Engineering B-12,	30
Power Weaving D-9,	30	Weaving Mechanism B-5,	30
Textile Chemistry and Dyeing Lectures C-9,	45	Physics B-11,	45
		Industrial History E-6,	15

Second Term.

Cotton Yarn Manufacture F-1,	140	Steam Engineering B-12,	15
Textile Design D-2,	60	Machine Drawing B-10,	45
Power Weaving D-9,	100	Strength of Materials B-17,	30
Textile Chemistry and Dyeing Labora- tory C-11,	75	Physics B-11,	45
		Industrial History E-6,	15

THIRD YEAR.

First Term.

Cotton Yarn Manufacture F-1,	180	Power Weaving D-10,	120
Knitting F-2,	30	Cotton Finishing H-2,	75
Textile Design, Cloth Construction, D-6, 7,	60	Electricity B-19,	30
		Mill Engineering B-21,	30

Second Term.

Cotton Yarn Manufacture F-1,	240	Mill Engineering B-21,	30
Knitting F-2,	45	Power Weaving D-10,	90
Textile Design, Cloth Construction, D-6, 7,	45	Cotton Finishing H-2,	75
		Thesis.	

Course II. — Wool Manufacturing.

The course on wool manufacturing is arranged for those who contemplate a career in the manufacture of woolen or worsted fabrics, and can devote but three years to the school work. It includes instruction on all of the varied processes employed in adapting the wool fiber to cloth, namely, sorting, scouring, carding, combing, spinning, designing, weaving, dyeing and finishing. The work is carried on by lectures, recitations and practical work in the laboratories.

Following the first term of the first year, which is common to all courses, the student in the course in technology of fibers is acquainted not only with the various kinds of wool and trade terms applied to them, but also with other commercial fibers, viz., cotton, silk, jute, hemp, flax, etc., used in the textile industry. He is at the same time taught the application of these fibers and the general processes of manufacturing each into a yarn.

Beginning with the second year the details of manipulating wool from the grease to the finished yarn is taken up for close study. This includes the spinning of woolen yarn, also worsted yarn, by both the English and the French systems. The intermediate processes of sorting, scouring, carding, combing and top-manufacturing are taken in detail and in proper sequence.

The general chemistry of the first year is followed by textile chemistry and dyeing in the second year. This includes a short course in the Dyeing Laboratory.

Textile design, cloth analysis and construction are continued from the first year throughout the course, the work being applied especially to woolen and worsted goods. Weaving on power looms commences in the second year and continues through the third.

Lectures on finishing commence with the third year and are augmented by extensive practice with the machines in the Finishing Department.

Work in the Engineering Department extends throughout all three years, and includes mechanical drawing, steam engineering and electricity. The practical application of the principles studied in these subjects is brought out forcibly in the work on mill engineering, where mill design and construction are considered. A short course covering methods employed in the testing of fibers, yarns and cloths, together with laboratory work in the manipulation of certain physical apparatus, is given in the third year.

For detailed description of the subjects see page 54.

Course II. — Wool Manufacturing.

[For first term see page 41.]

FIRST YEAR.

Second Term.

	Hours of Exercise.		Hours of Exercise.
Mechanism B-3,	45	Elementary Chemistry C-1,	75
Mechanical Drawing B-8,	90	Elementary German E-2 or	} 30
Mathematics B-1,	45	Elementary French E-4,	
Textile Design D-1,	120	Physical Culture I-1,	30
Technology of Fibers G-1,	60	English E-1,	30

SECOND YEAR.

First Term.

Woolen and Worsted Yarn Manufac- ture G-1,	240	Machine Drawing B-10,	30
Textile Design D-3,	60	Steam Engineering B-12,	30
Power Weaving D-9,	30	Weaving Mechanism B-5,	30
Textile Chemistry and Dyeing Lec- tures C-9,	45	Physics B-11,	45
		Industrial History E-6,	15

Second Term.

Woolen and Worsted Yarn Manufac- ture G-1,	140	Steam Engineering B-12,	15
Textile Design D-3,	60	Machine Drawing B-10,	45
Power Weaving D-9,	100	Strength of Materials B-17,	30
Textile Chemistry and Dyeing Labora- tory C-11,	75	Physics B-11,	45
		Industrial History E-6,	15

THIRD YEAR.

First Term.

Woolen and Worsted Yarn Manufac- ture G-1,	180	Power Weaving D-10,	120
Knitting F-2,	30	Woolen and Worsted Finishing H-1,	75
Textile Design, Cloth Construction, D-6, 7,	60	Electricity B-19,	30
		Mill Engineering B-21,	30

Second Term.

Woolen and Worsted Yarn Manufac- ture G-1,	135	Mill Engineering B-21,	30
Knitting F-2,	45	Power Weaving D-10,	165
Textile Design, Cloth Construction, D-6, 7,	75	Woolen and Worsted Finishing H-1,	75
		Thesis.	

Course III. — Textile Design (General Textile Course).

The general course in textile design is planned to meet the demand of young men for a technical training in the general processes of textile manufacturing, but with particular reference to the design and construction of fabrics. To this end a foundation is laid in the first year by instruction in the elementary principles of designing, decorative art and weaving. That he may later in the course pursue to advantage instruction in yarn manufacturing, weaving, dyeing, finishing and some engineering problems, a foundation course in mechanics, mathematics and chemistry is laid. As the student is required to pursue courses in the yarn departments, both cotton and wool, he acquires a knowledge of the manufacture of cotton yarns from the bale to the yarn, and of woolen and worsted yarns from the fleece through the varied processes of manufacturing woolen yarn or worsted yarn by both the French and Bradford systems.

Throughout his entire course he receives instruction in design, cloth analysis and construction of all the standard cloths, viz., trouserings, coatings, suitings, blankets, velvets, corduroys, plushes, etc. This is followed by advanced work in Jacquard designing and weaving, which serves not only to acquaint the student with the many kinds of cotton, woolen, worsted and silk fabrics of figured design, but stimulates and develops any artistic talent he may possess. Decorative art becomes an important part of the work of the second and third years.

The course in general inorganic and organic chemistry of the first year leads to the subjects of textile chemistry and dyeing in the second year. The instruction includes a short course in the Dyeing Laboratory.

Power weaving commences with the second year and continues throughout the course, and work on all types of looms is required.

During the third year the student receives instruction in the finishing of cotton goods and woolen and worsted cloths. This instruction is given by means of lecture and laboratory work.

The engineering subjects given in the second and third years are intended to acquaint the student with such general knowledge as will be of assistance should he be called upon in later life to be a mill manager, or should his subsequent progress lead to some executive position in the operation of a textile plant.

For detailed description of the subjects see page 54.

Course III. — Textile Design (General Textile Course).

[For first term see page 41.]

FIRST YEAR.

Second Term.

	Hours of Exercise.		Hours of Exercise.
Mechanism B-3,	45	Elementary Chemistry C-1,	75
Mechanical Drawing B-8,	90	Elementary German E-2 or }	30
Mathematics B-1,	45	Elementary French E-4, }	
Textile Design D-1,	120	Physical Culture I-1,	30
Technology of Fibers F-1 and G-1,	60	English E-1,	30

SECOND YEAR.

First Term.

Textile Design, Decorative Art, Hand		Machine Drawing B-10,	30
Loom Weaving D-2, 3, 4,	150	Steam Engineering B-12,	30
Cotton Yarn Manufacture F-1,	105	Weaving Mechanism B-5,	30
Power Weaving D-9,	75	Physics B-11,	45
Textile Chemistry and Dyeing Lectures		Industrial History E-6,	15
C-9,	45		

Second Term.

Textile Design, Decorative Art, Hand		Steam Engineering B-12,	15
Loom Weaving D-2, 3, 4,	120	Strength of Materials B-17,	30
Wool Yarn Manufacture G-1,	90	Physics B-11,	45
Power Weaving D-9,	90	Industrial History E-6,	15
Textile Chemistry and Dyeing Labora-		Machine Drawing B-10,	45
tory C-11,	75		

THIRD YEAR.

First Term.

Textile Design, Cloth Construction,		Power Weaving D-10,	135
Decorative Art D-6, 7, 8,	120	Woolen and Worsted Finishing H-1,	75
Woolen and Worsted Yarn Manufac-		Cotton Finishing H-2,	30
ture G-1,	105	Electricity B-19,	30
Mill Engineering B-21,	30		

Second Term.

Textile Design, Cloth Construction,		Power Weaving D-10,	135
Decorative Art D-6, 7, 8,	180	Woolen and Worsted Finishing H-1,	75
Woolen and Worsted Yarn Manufac-		Cotton Finishing H-2,	75
ture G-1,	30	Thesis.	
Mill Engineering B-21,	30		

Course IV. — Chemistry and Textile Coloring.

The four-year course in Chemistry and Textile Coloring, leading to the degree of B.T.C., is especially intended for those who wish to engage in any branch of textile chemistry, textile coloring, bleaching, finishing or the manufacture and sale of the dyestuffs or chemicals used in the textile industry. The theory and practice of all branches of dyeing, printing, bleaching, scouring and finishing are taught by lecture work supplemented with a large amount of experimental laboratory work and actual practice in the dyehouse and finishing room.

The underlying theories and principles of chemistry are the same, no matter to what industry the application is eventually made. Furthermore, no industry involves more advanced and varied applications of the science of chemistry than those of the manufacture and application of the coal-tar coloring matters. In addition, the textile colorist must consider the complex composition of the textile fibers, and the obscure reactions which take place between them and the other materials of the textile industry.

During the first year general chemistry, including both inorganic and organic, is taught by lectures and laboratory work, and this is supplemented during the second term by qualitative analysis and stoichiometry.

Advanced inorganic chemistry, as well as advanced organic chemistry, is studied during the second and third year as a continuation of the elementary chemistry of the first year, and much time is spent upon quantitative analysis, industrial chemistry, and textile chemistry and dyeing.

The foundation work in general chemistry is continued during the third year with courses in physical chemistry, organic laboratory work and analytical work. The subject of industrial chemistry is introduced, and much time is devoted to advanced textile chemistry, dye testing, color matching, calico printing and woolen, worsted and cotton finishing.

The fourth year is characterized by an endeavor to present certain subjects of a more applied nature in such a manner that the student's reasoning power and ability to apply the knowledge gained during the first three years may be developed to the fullest extent. The subject of engineering chemistry is introduced, and the work in the Dyeing and Analytical Laboratories is applied as far as possible to the actual requirements of the factory chemist and colorist. The student is given a thorough course in microscopy, photomicrography and the use of the various instruments, such as the spectroscope, ultra-microscope, polariscope, tintometer, etc., which often prove of vital importance in the advanced study of textile chemistry. During this fourth year the student devotes much time in the Organic Laboratory in the manufacture of dyestuffs. This is followed by some research work or original investigation, as time will permit. Upon this he must present a satisfactory thesis, or report, before receiving his degree.

For detailed description of the subjects see page 54.

Course IV. — Chemistry and Textile Coloring.

[For first year see page 41.]

SECOND YEAR.

First Term.

	Hours of Exercise.		Hours of Exercise.
Advanced Inorganic Chemistry C-4, .	45	Quantitative Laboratory C-7, .	180
Textile Chemistry and Dyeing Lecture C-9,	45	Steam Engineering B-12,	30
Textile Chemistry and Dyeing Labora- tory C-10,	75	Physics B-11,	45
Quantitative Analysis Lecture C-7, .	15	Industrial History E-6,	15
Stoichiometry C-3,	15	Advanced German E-3,	30
		Power Weaving D-9,	30

Second Term.

Advanced Inorganic Chemistry C-4, .	30	Quantitative Laboratory C-7, .	135
Textile Chemistry and Dyeing Lecture C-9,	30	Advanced Organic Chemistry C-5, .	30
Textile Chemistry and Dyeing Labora- tory C-10,	135	Physics B-11,	45
Stoichiometry C-3,	15	Industrial History E-6,	15
Mathematics B-2,	45	Advanced German E-3,	30
		Steam Engineering B-12,	15

THIRD YEAR.

First Term.

Advanced Textile Chemistry and Dye- ing Lecture C-14,	15	Quantitative Analysis Laboratory C-7, .	120
Advanced Textile Chemistry and Dye- ing Laboratory C-14,	180	Advanced Organic Chemistry Lecture C-5,	45
Industrial Chemistry C-13,	30	Technical German C-21,	30
Quantitative Analysis Lecture C-7, .	15	Woolen and Worsted Finishing H-1, .	75
		Economics E-7,	30

Second Term.

Advanced Textile Chemistry and Dye- ing Lecture C-14,	15	Physical Chemistry C-8,	30
Advanced Textile Chemistry and Dye- ing Laboratory C-14,	105	Technical German C-21,	30
Industrial Chemistry C-12,	30	Organic Laboratory C-15,	120
Woolen and Worsted Finishing H-1, .	75	Quantitative Analysis Laboratory C-7, .	90
		Economics E-7,	30

FOURTH YEAR.

First Term.

Physical Chemistry C-8,	15	Quantitative Analysis and Industrial Analysis C-17,	105
Technical German C-21,	15	Dyeing Laboratory C-14,	60
Engineering Chemistry C-16,	15	Organic Laboratory C-15,	135
Advanced Textile Chemistry and Dye- ing C-14,	30	Industrial Laboratory C-12,	30
		Thesis C-22,	90

Second Term.

Organic Laboratory C-15,	105	Textile Testing G-2,	15
Microscopy C-18,	45	Advanced Dyeing Conference C-19, .	15
Thesis C-22,	165	Technical German C-21,	30
Dyeing Laboratory C-14,	105	Engineering Chemistry C-16,	45

Course VI. — Textile Engineering.

This course of four years' training, leading to the degree of Bachelor of Textile Engineering (B.T.E.), aims to meet, in the broadest possible manner, the increasing demands of the textile industry for men with adequate and specialized preparation. The magnitude and scope of the textile and allied industries fully justify the most thorough technical training possible for all who aspire to leadership in this field. Much of the future development of the textile industry will depend upon an intensive application of science to its needs, and the possibilities are unlimited. The results of such application of scientific effort in other industries have been noteworthy, and modern progress calls for similar action in all. The demand is already strong for broadly trained engineers who have a full appreciation of the details and problems of the processes of textile manufacturing.

The student is first thoroughly grounded in the fundamental principles of mathematics and science underlying all engineering and industrial work. In such preliminary subjects as mechanics, drawing, physics and mathematics the practical uses of same are considered of first importance.

Much emphasis is laid on the study of power generation and transmission, and courses with laboratory practice are given in steam and electrical engineering to familiarize the student with modern practice in these branches.

Systematic instruction in the most approved methods of machine shop practice is given in a shop fully equipped with modern tools, and this feature of the course is considered a most valuable adjunct to the training of a textile engineer.

Thorough instruction in all of the various branches of textile manufacturing is provided for students pursuing this course. Among the subdivisions of these branches are textile designing, power weaving, cotton spinning, woolen and worsted spinning, dyeing, cotton and woolen finishing and textile testing.

The work in mill engineering covers a wide range of subjects, including mill construction, mill fire protection, mill heating, lighting and humidifying and power transmission. The arrangement of machinery and plants for most efficient production and economical power distribution is also taken up in detail.

During the fourth year considerable time is given to questions of business administration, including the principles and application of scientific management and efficiency engineering, mill cost accounting and business law.

For detailed description of subjects see page 54.

Course VI. — Textile Engineering (General Course).

[For first year see page 41.]

SECOND YEAR.

First Term.

	Hours of Exercise.		Hours of Exercise.
Textile Chemistry and Dyeing Lectures		Graphic Statics B-4,	30
C-9,	45	Engineering Laboratory B-14,	45
Physics B-11,	45	Weaving Mechanism B-5,	30
Mathematics B-2,	45	Shop Work B-15,	60
Machine Drawing B-10,	60	Cotton Yarn Manufacture F-1,	60
Steam Engineering B-12,	30	Advanced German E-3, 5,	30
Power Weaving D-9,	30	Industrial History E-6,	15

Second Term.

Physics B-11,	45	Shop Work B-15,	60
Mathematics B-2,	45	Wool Yarn Manufacture G-1,	90
Strength of Materials B-4,	30	Advanced German E-3, 5,	30
Machine Drawing B-10,	90	Industrial History E-6,	15
Steam Engineering B-12,	75	Power Weaving D-9,	30

THIRD YEAR.

First Term.

Electrical Engineering B-19,	60	Power Weaving D-10,	60
Machine Shop Practice B-15,	60	Mathematics B-2,	30
Engineering Laboratory B-14,	30	Mill Engineering B-21,	45
Woolen and Worsted Yarn Manufac- ture G-1,	105	Woolen and Worsted Finishing H-1,	75
Strength of Materials B-17,	30	Economics E-7,	30

Second Term.

Hydraulics B-13,	15	Woolen and Worsted Yarn Manufac- ture G-1,	105
Electrical Engineering B-19,	75	Woolen and Worsted Finishing H-1,	60
Mill Engineering B-21,	60	Power Weaving D-10,	30
Machine Shop Practice B-15,	45	Strength of Materials B-17,	30
Engineering Laboratory B-14,	45	Economics E-7,	30
Mathematics B-2,	30		

FOURTH YEAR.

First Term.

Cotton Yarn Manufacture F-1,	30	Woolen and Worsted Yarn Manufac- ture G-1,	75
Mill Engineering B-21,	90	Business Administration B-20,	90
Electrical Engineering B-19,	75	Thesis,	75
Cotton Finishing H-2,	15		
Power Plants B-18,	15		

Second Term.

Yarn Manufacture and Knitting F-1 and G-1,	90	Power Plants B-18,	30
Mill Engineering B-21,	75	Business Administration B-20,	90
Electrical Engineering B-19,	90	Thesis,	45
Cotton Finishing H-2,	75	Textile Testing G-2,	30

Course VI. — Textile Engineering (Cotton Option).

[For first year see page 41.]

SECOND YEAR.

First Term.

Hours of Exercise.	Hours of Exercise.
Textile Chemistry and Dyeing Lectures	Weaving Mechanism B-5, 30
C-9, 45	Shop Work B-15, 60
Physics B-11, 45	Cotton Yarn Manufacture F-1, 60
Mathematics B-2, 45	Cotton Design D-2, 30
Machine Drawing B-10, 30	Advanced German E-3, 5, 30
Engineering Laboratory B-14, 45	Industrial History E-6, 15
Steam Engineering B-12, 30	Power Weaving D-9, 30
Graphic Statics B-4, 30	

Second Term.

Physics B-11, 45	Cotton Yarn Manufacture F-1, 105
Mathematics B-2, 45	Cotton Design D-2, 45
Strength of Materials B-4, 30	Power Weaving D-9, 45
Machine Drawing B-10, 30	Advanced German E-3, 5, 30
Steam Engineering B-12, 75	Industrial History E-6, 15
Shop Work B-15, 60	

THIRD YEAR.

First Term.

Electrical Engineering B-19, 60	Power Weaving D-10, 45
Machine Shop Practice B-15, 60	Engineering Laboratory B-14, 30
Mill Engineering B-21, 45	Mathematics B-2, 30
Cotton Yarn Manufacture F-1, 120	Strength of Materials B-17, 30
Cotton Design D-6, 7, 45	Economics E-7, 30

Second Term.

Hydraulics B-13, 15	Power Weaving D-10, 75
Electrical Engineering B-19, 75	Engineering Laboratory B-14, 45
Machine Shop Practice B-15, 45	Mathematics B-2, 30
Mill Engineering B-21, 60	Strength of Materials B-17, 30
Cotton Yarn Manufacture F-1, 90	Economics E-7, 30
Cotton Design D-6, 7, 30	

FOURTH YEAR.

First Term.

Mill Engineering B-21, 90	Cotton Design D-6, 7, 45
Electrical Engineering B-19, 60	Cotton Finishing H-2, 15
Cotton Yarn Manufacture F-1, 98	Business Administration B-20, 90
Power Plants B-18, 15	Thesis, 60

Second Term.

Yarn Manufacture and Knitting F-1, 90	Textile Testing G-2, 30
Mill Engineering B-21, 75	Cotton Finishing H-2, 75
Electrical Engineering B-19, 90	Business Administration B-20, 90
Power Plants B-18, 30	Thesis, 45

Course VI. — Textile Engineering (Wool Option).

[For first year see page 41.]

SECOND YEAR.

First Term.

	Hours of Exercise.		Hours of Exercise.
Textile Chemistry and Dyeing Lectures		Weaving Mechanism B-5,	30
C-9,	45	Shop Work B-15,	60
Physics B-11,	45	Woolen and Worsted Yarn Manufac-	
Mathematics B-2,	45	tured G-1,	60
Machine Drawing B-10,	30	Woolen and Worsted Design D-3,	30
Engineering Laboratory B-14,	45	Advanced German E-3, 5,	30
Steam Engineering B-12,	30	Industrial History E-6,	15
Graphic Statics B-4,	30	Power Weaving D-9,	30

Second Term.

Physics B-11,	45	Woolen and Worsted Yarn Manufac-	
Mathematics B-2,	45	tured G-1,	105
Strength of Materials B-4,	30	Woolen and Worsted Design D-3,	45
Machine Drawing B-10,	30	Power Weaving D-9,	45
Steam Engineering B-12,	75	Advanced German E-3, 5,	30
Shop Work B-15,	60	Industrial History E-6,	15

THIRD YEAR.

First Term.

Electrical Engineering B-19,	60	Woolen and Worsted Finishing H-1,	75
Machine Shop Practice B-15,	60	Power Weaving D-10,	60
Mathematics B-2,	30	Engineering Laboratory B-14,	30
Mill Engineering B-21,	45	Strength of Materials B-17,	30
Woolen and Worsted Yarn Manufac-		Economics E-7,	30
tured G-1,	97		

Second Term.

Hydraulics B-13,	15	Economics E-7,	30
Electrical Engineering B-19,	75	Woolen and Worsted Yarn Manufac-	
Mill Engineering B-21,	60	tured G-1,	105
Machine Shop Practice B-15,	45	Woolen and Worsted Finishing H-1,	60
Engineering Laboratory B-14,	45	Power Weaving D-10,	30
Mathematics B-2,	30	Strength of Materials B-17,	30

FOURTH YEAR.

First Term.

Mill Engineering B-21,	90	Power Weaving D-10,	45
Electrical Engineering B-19,	60	Business Administration B-20,	90
Worsted Yarn Manufacture G-1,	120	Power Plants B-18,	15
Woolen and Worsted Design D-6, 7,	45	Thesis,	60

Second Term.

Mill Engineering B-21,	75	Business Administration B-20,	90
Electrical Engineering B-19,	90	Textile Testing G-2,	30
Worsted Yarn Manufacture and Knit-		Thesis,	45
ting G-1,	90	Power Plants B-18,	30
Woolen and Worsted Design D-6, 7,	30	Power Weaving D-10,	45

SUBJECTS OF INSTRUCTION.

TEXTILE ENGINEERING DEPARTMENT — B.

Mathematics (Algebra, Trigonometry, Elements of Analytical Geometry) — B-1.

PREPARATION: ADMISSION REQUIREMENTS.

This subject is given in the first year with the view of consolidating the separate branches of mathematics that have been given in previous years. The progress of the school has been such as to necessitate the introduction of higher algebra and trigonometry in the early part of the first term, and hence, as in other technical schools, it has resulted in a combined course. This course is presented by means of lectures, textbook, class and problem work, and consists essentially of the following: progressions, graphical representation, permutations and combinations, logarithms, slide rule, trigonometry, binomial theorem, partial and continued fractions, series, theory of equations, significant figures, and plotting of scientific data, straight line equations, point of division of a line, equation of parallel and perpendicular lines.

[All courses.]

Mathematics (Analytical Geometry, Differential Calculus, Elements of Integral Calculus) — B-2.

PREPARATION: B-1.

This course is a continuation of the work of the first year, and treats of the following subjects: formulæ of differentiation, conic sections, transformation of co-ordinates, maxima and minima, direction of curves, center and radius of curvature, problems on differential calculus, elements of integral calculus, integration as a summation, and plane areas. The above are treated in both rectangular and polar co-ordinates. Formulæ of integration, integration by parts, integration by substitution, successive integration, evaluation of integrals, center of gravity, center of pressure, total pressure, moment of inertia.

[Course VI.]

Mechanics and Mechanism — B-3.

PREPARATION: ADMISSION REQUIREMENTS. TAKEN SIMULTANEOUSLY WITH B-1.

These subjects are a necessary preparation for all courses, and are taken in one hundred and five hours of lectures and recitations covering the whole of the first year. The fundamental principles of these subjects are considered of the greatest importance, and the application and problems are selected with special reference to their practical uses in textile machinery. The large

variety of mechanism applications met in textile machines makes this course an essential one as a proper preparation for the student's later work in spinning and weaving. Some of the subjects treated in this course are: —

Mechanics.

Work, power and energy.
Principle of moments.
Simple and compound levers.
Differential and common pulleys.
Jackscrew and worm and wheel.
Parallelogram and triangle of forces.
Inclined plane and wedge.

Mechanism.

Linear and angular velocity.
Belting calculations.
Gears and gear trains.
Cam and cone pulley design.
Linkage problems.
Differential and epicyclic trains.
Intermittent motions.

[All courses.]

Graphic Statics — B-4.

PREPARATION: B-1 AND B-3.

The work in this course is presented by lecture and recitations. First are considered mathematical and graphical conditions for equilibrium for any system of forces, and the subjects of center of gravity and funicular polygons are introduced. Then follow problems on bridge and roof trusses under various conditions of dead, live, wind and snow loading. Masonry arches are finally considered.

[Course VI.]

Weaving Mechanism — B-5.

PREPARATION: B-1, B-3. TAKEN SIMULTANEOUSLY WITH D-9.

This course consists of thirty lectures given during the first term of the second year, and is required by all the regular students taking power weaving. A thorough analysis of all the important motions of power weaving is undertaken, and the treatment is by graphical and analytical methods. The object of this course is to so familiarize the student with the theory of the mechanism of the loom that the time spent in the weave room on loom fixing will be used to the best advantage.

[Courses I., II., III., VI.]

Mechanical Laboratory — B-6.

PREPARATION: B-3. TAKEN SIMULTANEOUSLY WITH B-4.

This work is given during the second term of the first year, and is supplementary to the course in Mechanism. Especial importance is attached to the demonstration of the fundamental principles of these subjects. Some of the experiments and tests made in this course are as follows: —

Determination of coefficient of friction.

Proof of principle of moments.

Proof of principle of work.

Efficiency test of various hoisting and lifting appliances, such as tackle and fall, worm block, differential and triplex blocks, jackscrews, wedges, etc.

Experimental proofs of the principles of graphic statics.

Efficiency tests on belt transmission, including measurement of belt tensions, coefficient of friction, slip, etc.

Tests on various types of absorption dynamometers.
 Calibration of transmission dynamometer.
 Power measurements on textile machinery with differential dynamometer.
 Measurement of friction of steam engine.

[Course VI.]

Mechanical Drawing — B-7.

PREPARATION: ADMISSION REQUIREMENTS. TAKEN SIMULTANEOUSLY WITH B-3.

This course is taken during the first year, and consists of work in the drawing room supplemented by lectures. This subject is considered of the greatest importance as a preparation for the student's future work, and the practical usefulness of drawing of this character is fully emphasized. The course is systematically laid out covering in order the following divisions:—

Care and use of drawing instruments.
 Geometrical constructions.
 Elements of projections and descriptive geometry.
 Isometric projection.
 Developments with practical applications.
 Sketching practice on machine details.

[All courses.]

Machine Drawing — B-8.

PREPARATION: B-7.

This work is the continuation of Mechanical Drawing, and is pursued throughout the second term of the first year. This work is wholly of a practical character, and includes sketching from the textile machinery details, working scale detail and assembly drawing, tracing and blue printing. The rudiments of machine design to supplement the work in strength of materials is also given.

[Courses I., II., III., VI.]

Machine Drawing — B-9.

PREPARATION: B-7.

For students electing Course IV. in the second term of the first year a course of machine drawing is given similar to B-8, except that it is not as extensive and is concluded in thirty hours.

Machine Drawing — B-10.

PREPARATION: B-3, B-7, B-8.

During the second year the work in Machine Drawing is devoted to advanced graphical mechanism problems. The data for all of these problems are in every case taken directly from some of the textile machines that the students meet in other departments. These problems include cam designs for builder motions, mule scroll layouts, Scaife builder motion analysis, fly frame cone design, mule quadrant motion, analysis of camless winder, and a number of others of similar character.

[Courses I., II., III., VI.]

Physics — B-11.

PREPARATION: B-1.

This course is given during the second year, and serves especially as a preparation for steam engineering, hydraulics, electricity and optics. The subject is presented by means of lectures, recitations, problems and reference books. The lectures deal chiefly with the application of the various physical laws and principles, with a view to their adaption to the above subjects, while the reference books are used to supplement the lectures. The subjects taken up are essentially as follows: gravitation, moving bodies; mechanics, elasticity, hydrostatics, elements of hydraulics, properties of fluids and gases, and the theory of sound. These subjects are followed by a series of lectures on heat phenomena, dealing with the generation of heat, thermometry, calorimetry, transfer of heat, its effect on solids, liquids and gases, and problems such as lead to the elements of steam engineering.

The latter part of the course is devoted to the discussion of the laws governing the nature, propagation and transmission of light waves, special stress being laid on interference, reflection and refraction, mirrors, lenses, microscope, spectroscope and photometer. Particular attention is given to the color effects produced by the combination of different colors in connection with Maxwell's Color Diagram and the Young Helmholtz Theory of Color Sensation. During the last part of the course the principles of electricity and magnetism are taken up in detail.

[All courses.]

Steam Engineering — B-12.

PREPARATION: B-11.

The purpose of this work is to familiarize the student with the essentials of power generation, and the means and methods of modern practice in steam engineering.

The different types of boilers, engines, pumps, condensers, turbines and other important features of a steam plant are first considered with reference to their construction and general arrangement. The remainder of the course is devoted to a thorough study of these elements of a power plant from the standpoint of the heat phenomena upon which their operation and efficient performance depend. Practice with the steam engine indicator is included in this work, and also engine and boiler testing.

[All courses.]

Hydraulics — B-13.

PREPARATION: B-3, B-11.

This subject is presented by means of lectures covering the principles of hydraulics, including hydrostatics, measurements of flow of water through orifices, pipes, nozzles and over weirs. The different types of turbines are studied with results of tests and rating tables.

[Courses I., II., VI.]

Engineering Laboratory — B-14.**PREPARATION: B-12.**

The principles underlying the subjects of steam engineering, hydraulics and thermodynamics are demonstrated in a practical manner in the work in the Engineering Laboratory. Greater importance is attached to the development of initiative and responsibility in the student than the mere accomplishment of a large number of carefully planned tests. The character of this work is indicated by the following list of experiments and tests: —

Calibration of gauges, thermometers, indicators, anemometers, tachometers and other measuring instruments.

Experiments on flow of steam.

Calorimeter tests.

Radiation tests and pipe-covering tests.

Injector and ejector tests.

Engine tests. Condensing and non-condensing.

Steam pump tests.

Surface condenser tests.

Valve setting.

Boiler testing.

Tests on heating and ventilating fans, both motor and engine driven.

Pump tests. Triplex and centrifugal.

Air-compressor tests.

Flue gas analysis.

Steam turbine tests. Condensing, non-condensing and low pressure.

Complete steam plant testing.

Gas engine testing.

[Course VI.]

Machine Shop Practice — B-15.**PREPARATION: B-3.**

Systematic instruction is given in the most approved methods of machine shop practice, the object being to familiarize the student with the proper use of hand and machine tools, and the characteristics of the different materials worked. Particular attention is given to the form, setting, grinding and tempering of tools and the mechanism of the different machines involving certain speeds, feeds, etc. The course is so planned that the instruction in each typical operation shall conform as nearly as possible to commercial machine-shop practice on textile machinery. The list of tools which appears under "Equipment" in this Bulletin gives an idea of the scope of the work, which includes chipping and filing, tool grinding and tempering, straight and taper turning, screw cutting, drilling and boring, planer work; milling machine work, including gear cutting. Instruction is also given in the use of woodworking tools, both hand and machine, and in forging.

[Course VI.]

Strength of Materials — B-17.

PREPARATION: B-1 AND B-3.

This is a short course consisting of thirty lectures given in the second year in which the elements of the subject are set forth. The main topics which are discussed are stress and strain, testing of materials, bending moments and shearing forces, beam design, column design, torsion, compound beams and columns, combined stresses. The course is largely preparatory for the third-year work in Mill Engineering, and is followed in the third year of the degree course in Textile Engineering by further and more advanced work along similar lines.

[Courses I., II., III., VI.]

Power Plants — B-18.

PREPARATION: B-12.

This course, which consists of lectures given during the third and fourth years, takes up the fundamental consideration involved in the planning of a power plant for a textile mill. A standard textbook is used in connection with the lectures, and the problems are taken largely from plans of existing modern plants. The choice of type and size of units for certain conditions are given particular attention.

[Course VI.]

Electrical Engineering — B-19.

PREPARATION: B-11.

The elementary principles of electricity and magnetism are considered in the lecture course of physics. Their development and application are taken up in this course in a detailed study of the means used to generate, transmit and transform electrical energy to meet the requirements of textile machinery and plants. This involves the theory of direct and alternating current generators, motors, instruments, as well as the various phenomena associated with them.

The laboratory course includes a study of instruments and methods employed in general electrical power testing. Attention is given to various lighting units, their particular properties and relative values in meeting the special problems of illumination in textile mills.

[Course VI.]

Business Administration — B-20.

In recognition of the great advances which have been recently made towards better methods of management, and of the possibilities which may result from its application to the textile industry, a course in efficiency engineering has been established to enable the student to understand and apply the principles and details of modern scientific management. The instruction in this course begins with a consideration of the factory location and design and their effect on efficiency of production, after which the proper form of organization for manufacturing establishments is discussed in detail, together with organization charts and records. This is followed by a study of the details of

the work of the various departments, especially the planning department, during which the subjects of time study, planning, routing, special slide rules and instruments, store systems and perpetual inventories, mnemonic symbolizing, orders and returns, graphical reports, etc., are all gone into very carefully.

The course includes a thorough study of the various wage systems in common use, and the relations of psychology to efficient management are also considered. Finally, visits to shops where modern methods of management have been installed enable the student to see the practical working out of the ideas developed in the lectures.

ACCOUNTING. — The purpose of the course in accounting is twofold. In the first place, it aims to acquaint the student with the modern methods of handling the financial end of a mercantile and manufacturing business, and at the same time gives him a much-needed knowledge of certain common elementary business transactions, such as, for instance, the use of checks, drafts and notes, bank discounts, etc. In the second place, it gives him an intelligent comprehension of the requirements and the design of a proper cost-accounting system.

Whereas it is not the purpose of the course to make the student a proficient bookkeeper or accountant, the nature of the work necessitates a knowledge of double-entry bookkeeping and of the functions of ledger accounts, which is developed by lectures and practice work. It is coupled with instruction on the compilation of balance sheets in proper form, together with profit and loss statements and supporting schedules. Thus a student is able to see the exact effect of each item of expense or income on the net profits of the business, or on its assets and liabilities, and can better judge of their relative importance. Accounting methods of handling charges incident to a manufacturing business are considered in lectures, and elaborated by actual practice.

Cost accounting forms an important part of this subject, and gives a knowledge of the various methods of distributing the proper proportion of wages, overhead expenses, etc., in ascertaining the cost of the finished product.

During the summer preceding this work of the fourth year the student is required to work up a simple bookkeeping set, thus saving valuable time during the school year, and effectively preparing the ground for the instruction work.

BUSINESS LAW. — Under this subject are given lectures, supplemented by the use of suitable texts, on the law governing contracts, negotiable instruments, sales, bills of lading, real estate and corporation.

PATENT LAW. — During the fourth year a course of six lectures is given by a practicing patent attorney of Lowell. This course takes up the elements of patent law, and is intended to give the student a guiding knowledge of the subject.

[Course VI.]

Mill Engineering — B-21.

PREPARATION: B-3, B-4, B-10, B-17.

This work covers a wide range of subjects and is of the most practical character possible. All of the student's previous work in engineering and his knowledge of the textile processes are here brought together in the consideration of the larger problems of mill design, construction and organization. A

detailed study is made of the most modern types of mill buildings, including all calculations and drawings. Practice is also given with the engineer's transit and level in plane surveying, setting batters, linings and leveling shafting.

The modern methods of power transmission and the proper arrangement of textile machinery are also given careful consideration. The problems are in every case taken from actual conditions in mills already built or in process of construction. The question of mill heating, ventilation, lighting, humidification and fire protection is also studied, and the time spent in the drawing room enables the student to work out nearly all of the more important problems involved in the design of an entire textile mill plant. The close relation existing between proper plant design and economical production is also considered.

[Course VI.]

CHEMISTRY AND DYEING DEPARTMENT — C.

Elementary Chemistry (Inorganic and Organic Chemistry) — C-1.

Instruction in Elementary Chemistry extends through the first year, and includes lectures, recitations and a large amount of individual laboratory work upon the following subjects: —

CHEMICAL PHILOSOPHY. — Chemical action, chemical combination, combining weights, atomic weights, chemical equations, acids, bases, salts, Avogadro's law, molecular weights, formula, valence, periodic law, etc.

NON-METALLIC ELEMENTS. — Study of their occurrence, properties, preparations, chemical compounds, etc.

METALLIC ELEMENTS. — Study of their occurrence, properties, metallurgy, chemical compounds, etc.

The students take up, as thoroughly as time will permit, the qualitative detection of the more common metals and non-metals, with practical work.

THE HYDROCARBONS AND THEIR DERIVATIVES. — Study of their occurrence, properties, preparations and uses. This work, although elementary in character, is of sufficient breadth to prepare the student understandingly for the work with artificial dyestuffs which follows.

[All courses.]

Qualitative Analysis — C-2.

PREPARATION: C-1 TAKEN SIMULTANEOUSLY.

Qualitative Analysis is studied during the second term of the first year. The work consists of lectures, recitations and laboratory work. The student must become familiar with the separations and the detections of the common metals and acids by the analysis of a satisfactory number of solutions, salts, alloys and pigments. At intervals during the term short laboratory tests are given as well as the regular written examinations.

No pains are spared to make the course as valuable to the student as possible, and to encourage only thorough and intelligent work.

When sufficiently advanced, students take up the examination of various products with which the textile chemist must be familiar, such as testing mordanted cloths, pigments and the various dyeing reagents.

During the latter part of this course a certain amount of time is devoted to the preliminary operations of quantitative analysis, such as the precipitation.

and washing of such substances as barium sulphate, magnesium ammonium phosphate and calcium oxalate, although no weighings or actual determinations are made.

A student's marks in this subject depend as much upon the neatness and care used in manipulation as upon the actual results obtained.

[Course IV.]

Stoichiometry — C-3.

PREPARATION: B-1.

This subject is taken during the second half of the first year, and is continued throughout the second year as an adjunct to Quantitative Analysis. The application of the metric system is thoroughly studied, and problems are worked involving the expansion and contraction of gases, determination of empirical formulæ, combining volume of gases and quantitative analysis.

[Course IV.]

Advanced Inorganic Chemistry — C-4.

PREPARATION: C-1.

The whole subject of Inorganic Chemistry is reviewed during the second year, and many advanced topics are introduced which were necessarily omitted from the first-year course in General Chemistry.

[Course IV.]

Advanced Organic Chemistry — C-5.

PREPARATION: C-1.

In this course, which consists of lectures and recitations, the principles of organic substitution and synthesis are thoroughly discussed, and as many illustrations are used as time will permit, particularly such as are applied in the arts. The aliphatic series of hydrocarbons and their derivatives are studied for about twenty weeks, the remainder of the time being devoted to the benzene series. The aim of the course is to lay a broad foundation for the study of the chemistry of the artificial dyestuffs. Students are required to work out problems in the synthesis of various compounds, in order to become familiarized with equation writing.

[Course IV.]

Quantitative Analysis — C-6.

PREPARATION: C-2, C-3.

During the second year the principles of analytical work are thoroughly taught, the work being based on Talbot's "Quantitative Chemical Analysis." Gravimetric analysis is studied during the first term, and volumetric analysis during the second term. The samples analyzed include salts, ores, minerals, bleaching powder and alkalis. Frequent recitations are held for the discussion of methods and the solution of stoichiometrical problems. Students are encouraged to read the standard works and magazines on chemical subjects, in order to cultivate broad views of the science.

[Course IV.]

Quantitative Analysis — C-7.

PREPARATION: C-6.

This course consists chiefly of technical analysis, the principal consideration being the analysis of water, alum, ammonia, soaps, coal, indigo, tannin and the ultimate analysis of organic compounds, as well as the examination of acids, alkalies, oils, scouring materials and such substances as starches, gums and other thickeners, and the detection of adulterants.

No pains are spared to give the student the benefits of all the latest researches along the lines of industrial analytical methods, and original work is encouraged in all.

[Course IV.]

Physical Chemistry — C-8.

PREPARATION: C-4, C-5, B-11.

This subject is studied during the third and fourth years. It includes the principles of calorimetry, specific heat, vapor density, the various methods of determining molecular weights, laws of solutions, electrolytic dissociation, theories of precipitation, thermo-chemistry, surface tension, etc. The student is required to work out a large number of problems introduced by the subject.

[Course IV.]

Textile Chemistry and Dyeing — C-9.

PREPARATION: C-1, B-3, B-7.

The outline of the lecture course which is given during the first term of the second year is as follows:—

TECHNOLOGY OF VEGETABLE FIBERS.—Cotton, linen, jute, hemp, china grass. Chemical and physical properties, chemical compositions, microscopical study, and their action with chemicals, acids, alkalies and heat.

TECHNOLOGY OF ANIMAL FIBERS.—Wool, mohair, silk. Chemical and physical properties, chemical compositions, microscopical study, and their action with chemicals, acids, alkalies and heat.

TECHNOLOGY OF ARTIFICIAL FIBERS.—Study of the various forms of artificial silk, the process of manufacture, their properties and action with chemicals, acids and heat.

OPERATIONS PRELIMINARY TO DYEING.—Bleaching of cotton and linen; wool-scouring; bleaching, fulling and felting of wool; carbonizing; silk-scouring and bleaching; action of soap.

The bleaching of cotton cloth, yarn and raw stock is studied at length with detailed description of the various forms of kiers and machinery used; also the action of the chemicals used upon the material, and the various precautions that must be taken in order to insure successful work.

Under this heading is also included an exhaustive study of the reagents used in the emulsive wool-scouring process, and their action upon the fiber under various conditions; also the most successful of the solvent methods for degreasing wool.

WATER AND ITS APPLICATION IN THE TEXTILE INDUSTRY.—Impurities present, methods for detection, their effect during the different operations of

bleaching, scouring, dyeing and printing, and the methods used for their removal or correction.

The important subject of boiler waters is also studied under this heading, with a full discussion of the formation of boiler scale, its disastrous results, and the methods by which it may be prevented.

MORDANTS AND OTHER CHEMICAL COMPOUNDS USED IN TEXTILE COLORING AND CLASSIFIED AS DYESTUFFS. — Theory of mordants, their chemical properties and application, aluminum mordants, iron mordants, tin mordants, chromium mordants, organic mordants, tannin materials, soluble oil, fixing agents, leveling agents, assistants, and numerous other compounds, not dyestuffs, that are extensively used in the textile industry.

Under this heading are included the definitions of various terms and classes of compounds used by textile colorists, such as color lakes, pigments, fixing agents, developing agents, mordanting assistants, mordanting principles and leveling agents.

THEORY OF DYEING. — A discussion of the chemical, mechanical, solution and absorption theories, and the various views that have been advanced by different investigators of the chemistry and physics of textile coloring processes.

Under this heading are discussed the general methods of classifying dyestuffs and the definitions of such terms as textile coloring, dyeing, textile printing, substantive and adjective dyestuffs, monogenetic and polygenetic dyestuffs.

NATURAL ORGANIC COLORING MATTERS. — Properties and application of indigo, logwood, catechu or cutch, Brazil wood, cochineal, fustic, tumeric, madder, quercitron bark, Persian berries, and other natural dyestuffs that have been used within recent years by textile colorists.

MINERAL COLORING MATTERS. — Under this heading are discussed the properties of such inorganic coloring matters and pigments as chrome yellow, orange and green, Prussian blue, manganese brown, and iron buff.

ARTIFICIAL COLORING MATTERS. — General discussion of their history, nature, source, methods of manufacture, methods of classification and their application to all fibers.

Special study of basic coloring matters, phthalic anhydride colors, including the eosins and phloxines; acid dyestuffs, Janus, direct cotton, sulphur and mordant colors, including the alizarines and other artificial coloring matter requiring metallic mordants; mordant acid and insoluble azo colors, developed on the fiber; reduction vat colors, aniline black and other artificial dyestuffs not coming under the above heads.

As each class of dyestuffs is taken up, the details of the methods of applying them upon all the different classes of fabrics and in all the different forms of dyeing machines are thoroughly discussed; also the difficulties which may arise in their application, and the methods adopted for overcoming them.

MACHINERY USED IN DYEING. — A certain amount of time is devoted to the description of the machinery used in the various processes of textile coloring, which is supplemented as far as possible by the use of charts, diagrams and lantern slides.

Most of the important types of dyeing machines are installed within the dyehouse of the school, and the students can be taken directly from the lecture room and shown the machines in actual operation.

[All courses.]

Dyeing Laboratory — C-10.

PREPARATION: C-9 TAKEN SIMULTANEOUSLY.

Besides lectures and recitations upon the subject of Textile Chemistry and Dyeing, practical laboratory work is required. By the performance of careful and systematic experiments the student learns the nature of the various dyestuffs and mordants, their coloring properties, their action under various circumstances, and the conditions under which they give the best results. The more representative dyestuffs of each class are applied to cotton, wool and silk, and each student is obliged to enter, in an especially arranged sample book, a specimen of each of his dye trials with full particulars as to the conditions of experiment, percentage of compounds used, time, temperature of dye bath, etc.

For convenience and economy most of the dye trials are made upon small skeins or swatches of the required materials, but from time to time students are required to dye larger quantities in the full-sized dyeing machines which are described elsewhere.

By the use of a small printing machine the principles of calico printing are illustrated, and by means of the full-sized dyeing machines and vats the practical side of the subject is studied. It is the constant endeavor of those in charge to impart information of a theoretical and scientific character that will be of value in the operation of a dyehouse.

[Course IV.]

Dyeing Laboratory — C-11.

PREPARATION: C-9 TAKEN SIMULTANEOUSLY.

This course in general laboratory work in Textile Chemistry and Dyeing is given during the second term of the second year. It is so arranged as to acquaint the student with the properties of the fibers, mordants and coloring matters, and their application in the textile industry.

[Courses I., II., III.]

Industrial Chemistry (Laboratory) — C-12.

Special attention has been given to this subject because it is considered extremely important in the study of chemistry in general, and of textile chemistry in particular. During the second year considerable time is spent in the laboratory in the actual manufacture, from raw materials, of the chemical compounds used in textile work. Each student is required to make careful record of all of the crude materials used, as starting points, and to carry the various processes through carefully with the view of producing as great and pure a yield of each substance as possible. Industrial chemistry not only involves the application of the principles of both inorganic and organic chemistry, but of analytical work as well, for the purity of the compounds produced must be tested after their manufacture.

In addition to the general work in this subject, each student is required to make a special study of the manufacture of some chemical from raw materials in considerable quantity (20 to 25 pounds), making a complete quantitative analysis of all raw materials used and of the finished product, accounting for everything throughout the process, with the object of producing as near the

theoretical yield as possible. The student is charged with the amount of raw material at market prices, and the finished product is bought back by the school.

Recently much new apparatus has been added to the Industrial Chemistry Laboratory, and it is now believed to be one of the most complete of its kind. The present equipment allows a comparatively large quantity of material to be handled at one time.

[Course IV.]

Industrial Chemistry (Lecture) — C-13.

PREPARATION: C-4, C-5, C-12.

During the whole of the third year lectures and recitations are held in industrial chemistry, the course in general following "Thorpe's Outline of Industrial Chemistry." Particular attention is paid to those subjects which are of special interest to the textile chemist, as oils, soaps, gas and coal-tar industry, building materials, and the manufacture on a large scale of important chemical compounds, such as the common acids and alkalies, bleaching powders, various mordants, etc. The course is illustrated as far as possible with specimens, diagrams and charts, and the students are given an opportunity to visit some of the industrial establishments in the vicinity of Lowell and Boston.

[Course IV.]

Advanced Textile Chemistry and Dyeing — C-14.

PREPARATION: C-9, C-10.

This is a continuation of the Textile Chemistry and Dyeing Course of the second year, and includes a review of the second year's work in this subject, with the introduction of many advanced considerations, and, in addition, the following subjects: —

CLASSIFICATION AND CONSTRUCTION OF ARTIFICIAL DYESTUFFS. — A study from a more advanced standpoint of the classification and constitution of artificial dyestuffs, including the various methods used in their production, also the orientation of the various groups which are characteristic of these compounds, and their effect on the tinctorial power of dyestuffs.

The object of this study is to give the student a more complete knowledge of the artificial dyestuffs from the color manufacturer's point of view, which will prove of particular value to those who intend later to enter the employ of dyestuff manufacturers or dealers.

COLOR MATCHING AND COLOR COMBINING. — A study of that portion of physics which deals with color and the many color phenomena of interest to the textile colorist. The lecture work is supplemented with the practical application of the spectroscope and tintometer, and much practice in the matching of dyed samples of textile material.

The primary colors both of the scientist and textile colorist, the results of combining coloring lights and pigments, and such subjects as color perception, color contrast, purity of color, luminosity, hue, color blindness, dichroism, fluorescence, and the effect of different kinds upon dyed fabrics, are discussed under this heading.

Each student's eyes are tested for color blindness early in the course, in order that he may be given an opportunity to change his course if his eyes should prove defective enough to interfere with his work as a textile colorist.

A dark room has been provided where various experiments in color work and color matching may be performed.

DYE TESTING. — This subject includes the testing of several dyestuffs of each class, subjecting them to the common color-destroying agencies; the determining of their characteristic properties, and their action towards the different fibers; also the determining of the actual money value and coloring power of dyestuffs in terms of a known standard.

Each student is required to make a record of each color tested upon an especially prepared card, which furnishes a permanent record of all dyestuffs, their dyeing properties, fastness to light and weather, washing, soaping, fulling, perspiration, bleaching, steaming, ironing, rubbing, acids and alkalis.

UNION DYEING. — A study of the principles involved in the dyeing of cotton and wool, cotton and silk, and silk and wool union materials in the production of solid and two-color effects.

TEXTILE PRINTING. — A thorough study of the whole subject of textile printing, each student being required to produce individually no less than twenty different prints, including the following styles: pigment style, direct printing style, steam style with tannin mordant, steam style with metallic mordant, madder or dyed style, the ingrain or developed azo style, discharge dye style, discharge mordanted style, resist style, indigo printing, aniline black printing.

The different parts of the calico printing machine are thoroughly studied; also the precautions which must be considered in its use, and the arrangement of the dyeing apparatus which must accompany such a machine.

Special attention is paid to the methods of mixing and preparing the various color printing pastes that are used in the above work upon a manufacturing scale as well as experimentally in the laboratory.

COTTON FINISHING. — A study of the various processes of finishing cotton cloth and the different materials used therein. The work involves the discussion of the various objects of cotton finishing and such operations as pasting, damping, calendering, stretching, stiffening, mercerizing, beetling and filling, and the various machines used for carrying out these processes.

MILL VISITS. — During the third and fourth years visits are made to some of the large dyehouses, bleacheries and printworks in the vicinity.

[Course IV.]

Organic Chemistry Laboratory — C-15.

This course, while including practice in the usual methods of organic analysis, and giving excellent training in the principles and manipulations of general organic synthesis, is especially devoted to the synthetic dyestuffs. The student not only prepares many of the representative dyestuffs, but, what is far more important, he carries out all the operations, beginning with coal tar itself. Thus, instead of merely coupling two or more of the foreign imported intermediate products to make a dyestuff, he starts with the basic substances obtained from the coal tar, and makes his own intermediate products. As far as is possible the student will be made acquainted with the problems which might arise in a dyestuff factory, and an excellent opportunity is presented for original work.

[Course IV.]

Engineering Chemistry — C-16.

PREPARATIONS: C-4, C-5, C-6.

A series of lectures is given upon the general subject of Engineering Chemistry, which include particularly the consideration of fuels, oils and water from the chemical engineer's standpoint. The elements of chemical engineering are also considered to such an extent as time will permit.

[Course IV.]

Industrial Analysis — C-17.

PREPARATION: C-6.

In conjunction with the lectures in engineering chemistry there is required a specified amount of laboratory work in the Industrial Analysis Laboratory, which has been recently thoroughly equipped with the latest and best apparatus for fuel and oil analysis.

[Course IV.]

Microscopy and Photomicrography — C-18.

The value of the microscope in the detection and examination of the various fibers cannot be overestimated, and often facts may be discovered, and conclusions drawn, which could be arrived at in no other way.

The students in this course are given as much work with the microscope as time will permit. They receive instruction in the use of the high-grade microscopes, and not only have practice in the examination and detection of the fibers, but are required to become proficient in the preparation of permanent slides.

Opportunity is also given for students to take photomicrographs of fibers and the various slides which they may prepare. A special dark room has been provided for this purpose.

[Course IV.]

Advanced Dyeing Conference — C-19.

During the latter part of his course each student will be required to write, for presentation before the other members of his class, a paper upon some assigned subject of general interest. After presentation the subject will be open to discussion and question.

The object of this conference is twofold. First, to give the student experience and practice in systematically looking up an assigned subject, and presenting it before others; and secondly, to bring before the class a greater variety of subjects with more detail than could be covered by the general lectures of the course.

[Course IV.]

Advanced Organic Chemistry (Dyestuffs) — C-20.

This course consists of an advanced study of the coal-tar coloring matters, their chemistry, relations of their composition to their coloring power, and the chemistry of their preparation.

[Course IV.]

Technical German — C-21.

This course consists of the reading of German technical literature, with the object of familiarizing the student with the current German publications in textile chemistry and coloring.

[Course IV.]

Thesis — C-22.

Before graduation the student must present a thesis which shall consist of a report of some original investigation or research that he has conducted while at the school.

A relatively large number of hours are specially set aside for this work, and students are encouraged to select some object for their investigation which shall be of practical as well as theoretical interest.

[Course IV.]

TEXTILE DESIGN AND WEAVING DEPARTMENT — D.**Textile Design — D-1.**

During the first year instruction is given in the subject of classification of fabrics, use of point or design paper, plain fabrics, intersection, twills and their derivation, sateen, basket and rib weaves, checks and stripes, fancy weaves, including figured and colored effects; producing chain and draw from design, and *vice versa*; extending and extracting weaves.

[First term, all courses.]

[Second term, Courses I., II., III., VI.]

Decorative Art — D-1.

The instruction in this subject is given in connection with Textile Design, and is conducted entirely by class work. During the first term freehand drawing is taught by means of plates and models, and practice in coloring is given in conjunction with this work.

Practice in lettering, spacing and general arrangement of designs and sketches is given. The engineering alphabet is used in all work.

During the second term instruction is given in drawing, sketching, coloring and designing, with reference to their application in textiles. Good examples of applied design in textiles, as well as in other branches, are used as a basis for modified designs selected and composed by the student. This stimulates originality as well as teaches the student to appreciate good designs and color.

Cloth Analysis — D-1.

In the first year this subject takes up in a systematic manner the analysis of samples illustrating the various cloth constructions for the purpose of determining the design of the weave and the amount and kind of yarns used, and forms the basis of calculation in the cost of reproducing any style of goods. The various topics discussed are reeds and setts; relation and determination of counts of cotton, woolen, worsted, silk, and yarns made from the great variety of vegetable fibers; grading of yarns, folded, ply, novelty and fancy

yarns; application of the metric system to yarn calculation; problems involving take-up, average counts, determination of counts of yarn, and weight of yarn required to produce a given fabric.

[First year, all courses.]

Hand Loom Weaving — D-1.

During the first year the work in hand-loom weaving is taken in connection with design and analysis, and consists largely of picking out patterns and reproducing them in the loom. Instruction is also given in hand dressing, combing, beaming, drawing-in and building harness chains for dobby work.

[First term, all courses.]

[Second term, courses I., II., III.]

Textile Design — D-2.

FOR COTTON GOODS — PREPARATION: D-1.

During the second year consideration is given to fancy and reverse twills, diaper work, damasks, skip weaves, sateen fabrics with plain ground, backed fabrics, and multiple ply fabrics. Students are required to make original designs and put the same into the loom. Special attention is given to the consideration of color effects.

The analysis of these fabrics forms a part of the course in design. This also includes the necessary calculations required to reproduce the fabric or to construct fabrics of similar character.

[Courses I., III., VI.]

Textile Design — D-3.

FOR WOOLEN AND WORSTED GOODS — PREPARATION: D-1.

During the second year the instruction given includes warp and filling backed cloth, figured effects produced by extra warp and filling, double cloths, multiple ply fabrics, cotton warps, blankets, bath robes, crêpes, filling reversible, Bedford cords, imitation furs, crêpons, matelasse and imitations, double plain, ingrains, velvets, corduroys, overcoatings, trouserings.

The analysis of these fabrics, together with the consideration of the shrinkages and dead loss in all fabrics, theory of diameter of yarns, and costs of mixer blends, is a part of this course.

[Courses II., III., VI.]

Decorative Art — D-4.

PREPARATION: D-1.

The work of the second year is similar to that of the previous year, but is more advanced and specific. More original work is required as well as copying and composition work.

[Course III.]

Textile Design — D-6.

PREPARATION: D-2 OR D-3.

The advanced work takes up the more complicated weaves adapted to harness work, and leads into leno and Jacquard designs. The following is a brief list of the subject heads, which will give some idea of the course: double plain cloths, ingrains, tricots, chinchilla, tapestry, blankets, upholsteries, spot weaves, pile or plush, crêpon, matelasse and its imitations, piqué, Marseilles, quilting, and miscellaneous designs for Jacquard, leno, fustian, tissue fabrics and lappets.

The same plan is pursued during this year as in the second year, — that of requiring the student to make original designs and to weave the same.

[Courses I., II., III., VI.]

Cloth Construction — D-7.

PREPARATION: D-2 OR D-3.

The work includes the application of the different weaves and their combinations in the productions of fancy designs, both modified and original; the calculation involved in the reproduction of standard fabrics changed to meet varying conditions of weight, stock, counts of yarn and value; and the discussion of the breaking strength of fabrics and relationship of the construction of the fabric to breaking strength.

Instruction in this subject, which is given by classroom work, is intended to bring together the principles considered under the subject of design, cloth construction, weaving and yarn making of previous years, and to show the bearing each has in the successful construction of a fabric.

[Courses I., II., III., VI.]

Decorative Art — D-8.

PREPARATION: D-4.

Original designs and sketches for particular grades of goods and the study of color effects form the important part of the third-year course. It should be understood that work in decorative art is carried on in conjunction with textile construction and weaving, particularly on the Jacquard loom. Designs of merit are carefully developed in detail and woven into cloth.

[Course III.]

Decorative Art for Special Students.

This course is planned to give a student a working knowledge and appreciation of design. The first and second years are devoted to a general study of design, color, perspective, lettering and rendering. Drawings are made in the historic styles for all materials, — wood, gold, silver, copper, brass, leather, fabrics, wall papers and glass.

In the third year students should specialize and devote their attention to the material in which they expect to work.

Power Weaving — D-9.

PREPARATION: D-1. TAKEN SIMULTANEOUSLY WITH B-5.

In connection with the work in Textile Design and Cloth Analysis practical work is carried on upon the power looms. This includes the preparation of warps, beaming, dressing, sizing, drawing-in and making of chains, the cutting and lacing of cards, spooling and quilling and the machinery for the same. A study is made of warpers and sizing machines, both for cotton and woolen. Lectures are given to correspond with the progress of the student in the Power Weaving Laboratory covering the following subjects: loom adjustments, chain building, shuttle changing looms, dobby looms, single and double acting dobbies, handkerchief motions, leno weaving, center selvedge motions, filling changing looms, oscillating reeds, lappet motions, various shaker motions, towel and other pile cloth weaving, Jacquard looms, single and double lift leno Jacquards, Jacquards of special design, tying up Jacquard harness. The consideration of the mechanical operation and design of the special mechanisms and the calculations involved are taken up by the Engineering Department in the Course of Weaving Mechanism.

[Courses I., II., III., VI.]

Power Weaving — D-10.

PREPARATION: D-9, D-2, or D-3.

Instruction is given in weaving on fancy woolen and worsted looms, single and double acting dobbies, leno weaving, various shaker motions, lappet loom weaving, double and single lift Jacquard looms, tying up Jacquard harness, leno Jacquard, harness and box chain building; warp preparation for woolen and worsted and cotton; formulas for making up different kinds of sizing. Lectures are given to correspond with the same.

[Courses I., II., III., VI.]

LANGUAGE AND HISTORY DEPARTMENT — E.**English — E-1.**

PREPARATION: ADMISSION REQUIREMENTS.

A technically trained man should be able to express himself clearly, forcibly and fluently, as inability to do so will be a serious handicap to him in after life. The object of the English course is to develop the student's power of expression by a thorough study of the principles of advanced rhetoric and composition, and by constant writing of themes illustrative of the four forms of discourse, viz., description, narration, exposition and argumentation. In addition to the study of rhetoric and composition and the writing of themes, several classics such as are not read in the preparatory schools are studied and discussed.

[All courses.]

Elementary German — E-2.

This course is intended for first-year students who offer French as an entrance requirement. The work is elementary in character, and much time is devoted to the study of the rudiments of German grammar with practice in

composition. During the latter part of the year considerable attention is given to the reading of ordinary German prose, which serves as an additional preparation to the student for the later reading of works along scientific and industrial lines.

Advanced German — E-3.

PREPARATION: E-2.

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year. The work consists of the study of some of the more advanced principles of grammar, and especially of the reading of scientific German dealing with a variety of subjects, and the translation of commercial German.

[Courses IV., VI.]

Elementary French — E-4.

This course is intended for first-year students who offer German as an entrance requirement. The work is elementary in character, and much time is devoted to the study of grammar and composition. Facility in translation is acquired by a considerable amount of reading from general or scientific sources.

Advanced French — E-5.

PREPARATION: E-4.

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year, and the work is devoted almost entirely to the translation of scientific French.

[Courses IV., VI.]

Industrial History — E-6.

PREPARATION: ADMISSION REQUIREMENTS.

The economic history of a nation is not less interesting or dramatic than its political history, while it is absolutely essential to a thorough understanding of modern business conditions. The object of this course, which is intended for second-year students, is to trace the development of the three leading industrial nations of the world, viz., the United States, England and Germany, from simple, isolated agricultural communities to the complex industrial and commercial society of to-day. The course consists of weekly lectures supplemented by textbook reading. Among the topics treated are natural resources; colonization, territorial expansion; manufactures; agriculture; finance; commerce; transportation; revenue tariffs; monopolies; governmental regulation; organization of labor; industrial legislation; immigration, conservation; contemporary problems. During the year each student will be required to write two or more theses on subjects connected with industrial history, in order that he may have practice in research work and also may continue his training in English.

[All courses.]

Economics — E-7.

PREPARATION: E-1, E-6.

This course consists of lectures supplemented by recitations based upon both the lectures and a textbook. The character of the course is descriptive rather than theoretical, and the aim is to acquaint the student with the accepted principles of economics and some of their applications to industrial conditions.

Among the topics discussed are the nature and scope of economics; the evolution of economic society; the three factors of production, land, labor and capital; the four elements in distribution, rent, wages, interest and profits; business organization; value and price; monopoly; money, credit and banking; international trade; protection and free trade; transportation; insurance; economic activities of municipalities; and public finance. In short, the course deals with the fundamental principles that underlie a wide range of activities.

[Courses IV., VI.]

COTTON DEPARTMENT — F.**Cotton Yarn Manufacturing — F-1.**

PREPARATION: B-1, B-3, B-7.

Instruction is given by means of lecture and laboratory work. The outline of the course is as follows:—

FIBER. — Before taking up the details of the operation of manipulating the fiber into yarn, a careful study is made of the characteristics and classification, both botanically and commercially, of the many varieties of the cotton fiber. Methods employed in cultivating, marketing, grading and stapling are considered, and under these heads a detailed study is made of the types of gin employed.

OPENING AND PICKING. — Instruction in the preliminary operation of opening and picking covers the mechanical construction of the machines, their parts and adjustments, as fully as the manufacturing results accomplished by the machines. This includes such construction details as eveners, lap measuring and safety stop motion, grids, cleaning trunks, beaters, etc.; also operation details which involve the adjustment of waste, drafts and character of laps.

CARDING. — The process of carding is considered one of the most important, and proper time is devoted to the construction and operation of cards that the student may be familiar with the various parts of the card and the function and design of each. The construction and application of card clothing, as well as the methods of grinding, form a part of the work.

DRAWING. — Under this head is taken up the theory of doublings and their effect upon the quality of roving and yarn. Like previous and subsequent processes the machine construction forms an important part of the work. Proper stress is paid to such subjects as stop motions, drawing rolls and their covering, cleaners and eveners motions.

ROVING PROCESSES. — Under this head is studied the various machines known as the slubber, intermediate, fine and jack fly frames. The relative motion of the various parts of these machines is so complex that a good oppor-

tunity is here presented to fix in the student's mind the application of certain mechanical principles that are used in other departments and upon other machines in the manufacture of textile material. With each process of yarn manufacture is explained the systems of sizing and numbering, and under this head is taken up both the metric and English systems.

RING SPINNING AND TWISTING. — The consideration of spinning yarn by the ring frame method involves a knowledge of the uses to which the yarn is to be put, subsequent methods of handling that proper roving may be selected, suitable amounts of draft and twist provided, correct size of rings and travelers selected, building motions suitably adjusted, etc. The operation of twisting yarns is so closely related to spinning by the ring method that it is studied at the same time. This opens an almost limitless field of novelty yarn manufacture, and offers a very good opportunity to derive new types of yarn or new mechanism to produce the effects. Yarn defects are studied with reference to the cause and remedy.

MULE SPINNING. — This method of spinning is very different from that of the ring frame, and the mechanical details are more complicated. The student is furnished with new means of producing yarns, and can compare the relative advantage of each method. A thorough understanding of mule spinning is perhaps more a study of mechanical motions and their functions. This results almost invariably in assisting the student to understand previous processes and machines better because of his work on the mule. It is the object to make clear to the student's mind the principles underlying the construction and operation of the parts that control the drawing, twisting, backing off, winding, together with such special motions and devices as are used upon the modern mule.

COMBING. — This process is explained by lecture work and by operation and assembling of the various types of combs in service in the laboratory. The object of combing is fully considered, and the different means employed on the many types of combers on the market is studied. This includes such types as the Heilman, New Whitin and Nasmith combers.

ORGANIZATION. — Following the detailed study of the individual processes it is necessary to consider the relation of each to the other, the programs, balance of production, cost of machinery for various counts, quantities and styles of yarns. Under this heading is also studied such subjects as depreciation of machinery, cost systems, economics, arrangement of machinery, power demands, etc.

[Courses I., III., VI.]

Knitting — F-2.

This course, commencing with a study of hosiery yarns and their preparation for knitting, includes a study of the various stitches and their application in commercial fabrics; a study of the different knitting machines, including circular and flat spring and latch needle machines used in the manufacture of stockings, sweaters and underwear; and a study of looping and sewing machines. A part of the work consists of the assembling and adjusting of different types of knitting machines.

In addition, considerable time is spent in the analysis of knitted fabrics.

WOOLEN AND WORSTED YARNS — G.

Manufacturing — G-1.

PREPARATION: B-1, B-3, B-7.

RAW MATERIALS. — A study of raw materials which enter into the manufacture of woolen or worsted yarns, or are made into yarns by processes similar to those employed in the manufacture of woolen and worsted yarns, would include silk, mohair, alpaca, vicuna, cashmere, camel's hair, cotton, flax, hemp, jute and ramie. In connection with these are considered shoddy, noils, mungo and extracts.

WOOL SORTING. — Familiarity with the various grades and kinds of wool is obtained by lecture and by actual sorting of fleece wool under the direction of an experienced wool sorter. The various characteristics and properties are explained, as are also trade terms, such as picklock XXX., XX., $\frac{1}{2}$ -blood, $\frac{3}{8}$ -blood, $\frac{1}{4}$ -blood, delaine, braid, etc. Some skill is acquired in the estimation of shrinkage and in judging the spinning qualities.

WOOL SCOURING. — The object of scouring and the methods employed are explained, and this involves the consideration of the soaps and chemicals used in washing; also the waste products and their utilization. Actual work is done in scouring a commercial quantity of wool by machines that are made similar in operation to regular commercial machines. A study is made of the effect of the hardness of water upon soap; also tests are made to show this effect. At the same time the use of driers, their operation and regulation, is taken up, and the methods of carbonizing wool, noils, burr waste, rags, etc., are studied and practiced.

BURR PICKING, MIXING AND OILING. — In these processes, preliminary to carding, the students have an opportunity of mixing various colors of wools to produce different effects, and the influence of varying percentages of a given color in a mixture can be seen. Each student is required to make at least twenty sample mixes combining different colors and grades of stock, and to felt and mount the same. Under the subject of oils and emulsions are taken up the characteristics of various oils and the means employed to test these. The use of mixing and burr pickers is made clear.

CARDING. — The different systems of carding wool, depending upon whether it is to be made into woolen or worsted yarn, are fully explained, as is also the construction, setting and operation of the cards. A part of the work is the reclothing and grinding of the cylinders, strippers, workers, etc. The carding of suitable and commercial quantities of wool, and the further manufacture of it into yarn, serves to fix the principles of carding in the mind of the student, as well as to give him some skill in handling machinery. At the completion of this part of the work he is required to prepare and hand in a full description of the process of carding, including working drawings, sketches, etc., to fully explain the machines and the methods.

WOOLEN MULE. — The student studies thoroughly the operation of the mule as a whole, and acquaints himself with the various principal mechanisms, as, for example, the backing off and winding motions, the quadrant, builder-rail, faller regulation, etc. He is required to run the mule and later hand in a thesis describing in full the machine, its parts and their operation.

TOP MAKING AND COMBING. — This branch takes up, besides the carding of the wool on a worsted card, the preparing processes; also gilling of the stock

before and after combing. The construction of the gill boxes and combs is studied by lectures, and by dismantling and assembling these machines in the laboratories. Later, quantities of stock are made into top and then into yarn.

The Noble and Lister combs are studied, and the various calculations to determine draft, noiling, productions, etc., are made.

DRAWING AND SPINNING. — The equipment in the laboratory offers opportunity to make worsted yarn by either the Bradford or open drawing system or by the French system. The process includes the various machines in the successive steps of making Bradford spun yarn, and the functions of the different machines are studied. In the latter, or French system, the stock is run through the drawing machines, and the roving spun into yarn on the French mule. The same method of studying the mechanism and operations of these machines is followed as in the case of previous methods of instruction. The student by pursuing this course can compare the different methods of yarn manufacture and note the results of each.

With the instruction on the Bradford system is given work on the twistors and the effects that may be produced.

ORGANIZATION. — At the end of the course the layout of a properly balanced yarn mill is studied, and at the same time the cost of the machinery, depreciation, labor costs and machinery arrangements.

[Courses II., III., VI.]

Textile Testing — G-2.

The object of this course is to familiarize the student with present-day methods of determining the physical properties of textile fibers, yarns and fabrics. The application of physical laws and methods of measurements, as studied in the Course of Physics, is used in the study of physical characteristics of textile material. The work is given to students in advanced courses, and consists of lecture and laboratory work. Reports are prepared from each experiment, giving the object of the experiment, method of procedure, observation and conclusions, in order that the student may acquire practice and understand the interpretation of data. A special testing laboratory has recently been constructed, and a considerable number of the best standard fiber, yarn and fabric testing instruments of German make have been imported. The laboratory is equipped with means of making and keeping the humidity constant, so that tests can be made under uniform or standard conditions of humidity and temperature.

FINISHING DEPARTMENT — H.

Woolen and Worsted Finishing — H-1.

PREPARATION: B-3, C-1, D-1, D-9.

The outline of this course, which is given by means of lecture and laboratory work is as follows: —

BURLING AND MENDING. — Under this head is taken up for consideration the examination of flannel as it comes from the loom; the construction, use and location of the perch; the methods used in marking defects, measuring, weighing and numbering of cloths; also the methods of inspection for fancies, single cloths and double cloths. The object of burling, mending and the types of tables employed, the method of removing knots, runners, etc., the object

of back shearing and the use of burling irons, the replacing of missing threads and the importance of sewing as a part of the finishing process, are all considered in detail. The removal of oil and tar spots as well as stains of various kinds is studied.

FULLING. — This branch covers a study of the conditions of the flannel as it comes from the loom, and the influence of oil, etc., upon the procedure. Considerable time is devoted to the various methods of producing a felt, the early types of stocks, hammer falling and crank stocks, and their modifications and development into the present type of rotary fulling mills of both the single and double variety. The details of construction in all machines are carefully taken up and include the design and composition of the main rolls, methods of covering, regulation and means of adjusting the pressure of traps and rolls, consideration of the shoes, the use and regulation of the various types of stop motion, the different types of stretchers, guide rolls and throat plates.

The theory of felt is taken up and the influence of pressure, moisture, heat, alkali and acid is considered, as well as the hygroscopic and felting properties of different wool fibers. The preparation of the flannel for the mill and the usual methods of determining shrinkages, as well as the various methods of soaping, are given careful attention. The preparation of various fulling soaps and the value of each for the production of various degrees of felt, as well as the determination of the proper amount of alkali for various goods, are carefully studied and demonstrated. The manipulation of the various kinds of goods in the mill, viz., all wool, shoddies and mixed goods, is studied in classroom and by operation in the mill.

The change in weight and strength for each operation is carefully considered, as is also the value of the flocks made in each. A study of the various methods of flocking, such as dry and wet, is considered in both class and machine rooms. In each operation the defects likely to materialize are studied, as well as the cause thereof, and various methods of modifying or lessening them.

WASHING AND SPECK DYEING. — This branch considers the scouring, rinsing and washing of specks both before and after the fulling process; the various types of washers; and the details of construction, such as suds box, rolls, etc. The theory of scouring, uses of Fuller's earth, salt solutions and sours on the different kinds of goods are made clear by practical work in the machine room, where the effects due to improper scouring, such as stains, cloudy effects, wrinkles and unclean goods, are demonstrated. The discussion of the necessity of speck dyeing follows naturally from the study of these matters, and includes methods of preparation, materials used, application and tests required.

CARBONIZING. — This is an important branch of finishing, and includes a study of the various carbonizing agents, methods of application, strength of solutions, and neutralizing, as well as the machines used. Stains and imperfections resulting from carbonizing are also considered. The drying and tentering machines and extractors employed are taken up at this point.

GIGGING, NAPPING AND STEAMING. — The construction in detail of the various types of gigs, nappers, steamers, wet gigs, rolling, stretching, crabbing and singeing machines is discussed, and their actions upon the cloth and the results obtained are explained.

Various methods of obtaining luster and the production of permanent finish are considered in connection with steaming and sponging.

BRUSHING, SHEARING AND PRESSING. — This includes as do the other branches a careful treatment of the machine employed, the preparation of the

cloth for each process, the action of each machine in producing its part of the resultant effect. In manipulation of the shear consideration is given to its setting, grinding and adjustment. With the brushing machine the effect of steaming and moisture upon the luster and feel of the goods is shown. A study of the action of the presses, both plate and rotary, involves consideration of pressure, steaming, etc. Special processes to obtain particular effects are taken up, and the part played by each machine is explained. The details involved in handling cloth on a commercial scale, as, for example, measuring, weighing, ticketing, numbering and rolling, are also explained. The necessary calculation and the methods of finishing all grades of goods are considered from time to time during the year.

[Courses II., III., IV., VI.]

Cotton Finishing — H-2.

PREPARATION: B-3, C-1, D-1, D-9.

The outline of the course in the finishing of cotton fabrics is as follows: —

CLOTH ROOM. — Instruction of the various goods and the object thereof; construction of the various types of inspecting and trimming machines.

SHEARING. — The object. A consideration of the various types of shears for treating one or both sides at the same time; also the use of the usual cleaning devices, such as emery, sand and card rolls, beaters and brushes; grinding and the adjustment of the various parts.

The use of brushing and cleaning machines, rolling devices and calender attachments for gray goods.

SINGEING. — Developing and object of singeing; the construction of singers of all types, and for various purposes; the use of cooling tanks, steaming devices, rolling and brushing attachments.

Regulation of the flame for various goods, and adjustment of the parts; gas and air pressure, water-cooled rolls; the effect of moisture on the cost of singeing; the use of dry cans in connection with singeing; electric singeing.

WASHING. — Open width and string washers, their construction and operation; soaps, temperature, squeeze rolls; washing of various goods and the object thereof; stains.

NAPPING. — The object of napping and the usual method of treating goods; various types of nappers, single and double acting; felting nappers; construction, grinding and adjustment of various types.

WATER MANGLES. — Their object and the construction of various types; various rolls, iron, husk, etc.; scutchers, their object and constructions.

STARCH MANGLES. — The object and construction of all types of starch mangles for pure starch and filled goods; various types of rolls, brass, rubber, wood; action of doctor blades, etc.; regulation and object of pressure.

Methods of starching and finishing all standard goods, also a consideration of the various substances used, such as starch, softener and fillers; the preparation of starch and various methods of application.

DRYERS AND STRETCHERS. — Both horizontal and vertical, tenter frames, clips; the swing motion and the finishes thus produced; construction; spraying machines, belt stretchers, button breakers; their object and construction.

CALENDERS. — The object and construction of all types, including the regulation of pressure and nips for the production of various finishes; various types of rolls and their uses, — steel, husk and paper; the use of hot and cold

rolls; chasing, friction, embossing and Schriners calenders, and the various finishes produced by each; production of watered effects; beetling machines.

Making up room, — yarding, inspecting; different types of folds; pressing, papering, marking.

[Courses I., VI.]

PHYSICAL CULTURE — I-1.

This subject is required of all students registered for first-year work. The course consists of general athletic exercises with small squads on the campus during the pleasant weather of the fall and spring, and exercise in the school gymnasium during the winter months. The instruction is given by the director of physical culture. Previous to the commencement of the work in the fall, each member of the class is required to submit to a thorough physical examination, a careful record of which is kept. Again, at the end of the year, another examination is held that progress may be noted.

The student's record depends both upon his regularity of attendance and upon the character of his work. A student who is not regular in attendance, or who does not make sufficient progress in the work, will be required to repeat the subject during the second year.

[All courses.]

ALUMNI ASSOCIATION.

The Alumni Association of the School holds its annual meeting and banquet in February of each year in Boston, Mass.

The membership of the association is restricted to graduates of the day school. Honorary membership is open to the Board of Trustees, the faculty and such others as may be elected by the association.

The officers for the year 1919 are:—

President, Henry A. Bodwell, '00.

Vice-President, Frank W. Emerson, '03.

Secretary-Treasurer, Arthur A. Stewart, '00.

Board of Directors: the President, Vice-President, Secretary-Treasurer, Harold W. Leitch, '14, for one year A. S. Walker, '11, for two years. Communications should be addressed to Arthur A. Stewart, Lowell Textile School.

ENTERTAINMENT COMMITTEE.

Robert R. Sleeper, '00, *Chairman*.

Royal P. White, '14.

Everett B. Rich, '11.

A. J. Hennigan, '06.

James F. Dewey, '04.

OFFICERS AND INSTRUCTORS.

President.

CHARLES H. EAMES, S.B., Massachusetts Institute of Technology, 1897; active member of the American Institute of Electrical Engineers; member of the American Association for the Advancement of Science. Experience: Secretary of the Lowell Textile School and instructor in electrical engineering and mathematics; superintendent, Light, Heat and Power Corporation, Lowell; and engineer with Stone & Webster, electrical engineers, Boston, Mass.

Instructors.

TEXTILE ENGINEERING.

- HERBERT J. BALL, S.B., B.C.S., chief instructor. Massachusetts Institute of Technology, 1906; Northeastern College, 1916. Experience: Accountant with Robert Douglas & Co., Boston, Mass.; instructor, Northeastern College; draftsman, Watertown Arsenal; Lincoln-Williams Twist Drill Company.
- ULYSSES J. LUPIN, S.B., instructor in mathematics, physics and electrical engineering. Lawrence Scientific School, 1906. Experience: Draftsman, General Electric Company, Lynn, Mass.; with Winston Company, Metropolitan Water Board.
- EDWARD K. HULL, instructor in mechanical drawing. Experience: Assistant instructor in mechanical drawing at Tufts College; instructor in mechanical drawing at University of Maine; draftsman for Boston & Maine Railroad, Boston, Mass.
- CHARLES H. JACK, instructor in machine-shop practice. Lowell Textile School. Experience: Amoskeag Manufacturing Company, Manchester, N. H.
- JAMES A. TUCK, S.B., instructor in mechanical engineering. Columbia University, 1910. Experience: Instructor in charge of mechanical engineering course, General Electric Engineering School; designer with Stone & Webster, American Sugar Refining Company, New York, New Haven & Hartford Railroad Company and French & Hubbard.
- WENDELL H. KAYSER, S.B., instructor in mathematics, mechanics and drawing. Massachusetts Institute of Technology, 1918. Experience: Computer and draftsman, Ordnance Department; with Shepard Electric Crane and Hoist Company, Mantour Falls, N. Y.
- CLIFTON L. RICE, A.B., M.C.E., evening instructor in mathematics. Graduate School of Applied Science, Harvard University, 1913. Experience: Sanitary engineer, Lowell Filtration Plant.
- HAMAZASB DER MANUELIAN, S.B., evening instructor in mechanical drawing. Massachusetts Institute of Technology, 1918. Experience: United States Cartridge Company, Lowell, Mass.

CHEMISTRY AND DYEING.

- LOUIS A. OLNEY, S.B., M.S., chief instructor. Lehigh University, 1896; member American Institute of Chemical Engineers. Experience: Instructor, Brown University; dyeing and finishing department, Stirling Mills, Lowell, Mass.
- ROBERT R. SLEEPER, instructor in dyeing. Lowell Textile School, 1900. Experience: Read, Holiday & Sons, Limited, New York City; H. A. Metz & Co., New York City; Hamilton Print Works, Lowell, Mass.; Merrimack Manufacturing Company, Lowell, Mass.
- ARTHUR K. JOHNSON, S.B., instructor in chemistry. Lowell Textile School, 1913; Massachusetts Institute of Technology, 1917.
- ELMER E. FICKETT, B.S., instructor in chemistry. Tufts College, 1908. Experience: Assistant chemist, Walworth Manufacturing Company, Boston, Mass.; superintendent assayer, United States Nickel Company; instructor in School of Mines, University of North Dakota; instructor in Washington University, St. Louis, Mo.
- L. PAUL CHAPIN, Ph.D., B.S., instructor in chemistry. Leipzig University, 1902; University of Minnesota, 1897. Experience: Assistant instructor, Massachusetts Institute of Technology; sugar chemist, Gaudchaux Company, New Orleans, La.; principal of high school, Braintree, Mass.

- FREDERICK S. BEATTIE, Ph.B., instructor in chemistry. Brown University, 1906. Experience: assistant in chemistry, Brown University; instructor in chemistry, Lehigh University.
- HOWARD D. SMITH, Ph.D., evening instructor in chemistry. Tufts College, 1906; Brown University, 1904; Rhode Island College, 1901. Experience: Assistant instructor, Brown University and Tufts College; instructor, Beloit College, Wisconsin.

TEXTILE DESIGN AND WEAVING.

- HERMANN H. BACHMANN, chief instructor. Gera Textile School, Germany. Experience: Gustav Weise Public Designing House for the City of Gera; Parkhill Manufacturing Company, Fitchburg, Mass.; Lorraine Manufacturing Company and Smith Webbing Company, Pawtucket, R. I.
- HARTMAN F. SCHMIDT, instructor in textile design and cloth analysis. Lowell Textile School, evening class, 1914. Experience: Hockanum Mills Company, Rockville, Conn.; Wood Worsted Mills, Lawrence, Mass.; Albany Felt Company, Albany, N. Y.
- MARTIN HOELLRICH, instructor in power weaving. Lowell Textile School, evening class, 1910; textile school, Reichenbach, Ger. Experience: C. F. Weiss, Helmbrechts, Ger.; J. Back, Turkish shawls, Reichenbach, Ger.; Parkhill Manufacturing Company, Fitchburg, Mass.; American Woolen Company, Lawrence and Winooski; Pacific Mills, Lawrence, Mass.
- CHARLES PEIRCE, evening instructor in power weaving. Lowell Textile School. Experience: Massachusetts Mills.
- E. ELIZABETH WHITNEY, evening instructor in freehand drawing. Normal Art School, Boston, 1882; pupil of Dr. Denman W. Ross, lecturer in design, Harvard University. Experience: Teaching eighteen years.
- EDITH C. MERCHANT, evening instructor in freehand drawing. Normal Art School, Boston, 1908. Experience: Teaching, evening drawing school, Lowell, Mass.; supervisor of drawing, Pepperell, Mass.

COTTON YARNS.

- STEPHEN E. SMITH, chief instructor. Lowell Textile School, 1900. Experience: Draftsman, Saco-Lowell Shops, Lowell, Mass.; Atlantic Cotton Mills, Lawrence, Mass.; Shaw Stocking Company, Lowell, Mass.

WOOLEN AND WORSTED YARNS.

- EDGAR H. BARKER, chief instructor. Massachusetts Institute of Technology, 1896. Experience: Pacific Mills, Lawrence, Mass.; E. Frank Lewis, Lawrence, Mass.; wool scouring.
- JOHN C. LOWE, instructor in woolen and worsted yarns. Lowell Textile School, evening class, 1911. Experience: Wood Worsted Mills, Lawrence, Mass.
- GUY E. BRANCH, instructor in worsted yarns. Lowell Textile School, evening class, 1915. Experience: Pacific Mills, Lawrence, Mass.
- JOHN N. HOWKER, evening instructor in wool sorting and scouring. Technical School of Saltaire, near Bradford, Eng.; certificate from City and Guilds of London. Experience: Saltaire Mills, Yorkshire, Eng.; Goodall Worsted Company, Sanford, Me.; Arlington Mills, Lawrence, Mass.

FINISHING.

- ARTHUR A. STEWART, chief instructor. Lachine Academy, Canada; Lowell Textile School, 1900. Experience: Dominion Woolen Manufacturing Company, Montreal, Can.; American Woolen Company Mills; Nonantum Worsted Mills, Newton, Mass.; instructor in woolen and worsted yarns, Lowell Textile School.
- C. LEONARD GLEN, instructor in finishing. Experience: Dunnell Manufacturing Company, Pawtucket, R. I.; United States Finishing Company, Pawtucket, R. I.; O'Bannon Corporation, West Barrington, R. I.

LANGUAGES AND HISTORY.

- LESTER H. CUSHING, A.B., chief instructor. Harvard College, 1911.

GRADUATES, JUNE 7, 1918.

Graduates, with Titles of Theses.

DEGREES CONFERRED.

EARL WILLIAM CLARK,	Salem Depot, N. H.
Bachelor of Textile Chemistry. "Study of a New Method of Sulphonation as applied to Certain Sulphonic Acids of Beta Naphthol."	
JOHN FRANCIS FITZGERALD,	Woburn, Mass.
Bachelor of Textile Chemistry. "A Study of the Standardization of the Fastness of Colors to Light."	
FRANCISCO DE SA,	Bahia, Brazil.
Bachelor of Textile Engineering. "Standardization of Builder Motions for Cotton Twisters."	
SAMUEL PALAIS,	Roxbury, Mass.
Bachelor of Textile Chemistry. "The Preparation of Certain of the Vat Dyestuffs."	
HAROLD WINFRED STIEGLER,	Lawrence, Mass.
Bachelor of Textile Chemistry. "Determination of the Molecular Structure of an Unclassified Azo Dyestuff."	
HERBERT ELLSWORTH SUNBURY,	Wamesit, Mass.
Bachelor of Textile Engineering. "The Effect of Reflectors on Light Distribution as applied to Textile Manufacture" (thesis with Gilbert Roscoe Merrill).	

DIPLOMAS AWARDED.

HERBERT RICHARD CARL MAUERSBERGER,	Passaic, N. J.
Textile Design. "The Manufacture of Ladies' Worsted Dress Goods."	
WEBSTER PLAISTED,	Arlington, Mass.
Wool Manufacture. "The Manufacture of a Worsted Suiting."	

Awards for Proficiency in First and Second Year Chemistry.

First. — Ten dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship in first-year chemistry. Awarded to Charles Greenwood Moore.

Second. — Five dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship in first-year chemistry. Awarded to Louis Berlin.

Third. — Ten dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during the second year. Awarded to Moses Hyman Goldman.

Fourth. — Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during the second year. Awarded to Louis Samuel Zisman.

The above sums to be invested in books.

Medal of the National Association of Cotton Manufacturers awarded to Gilbert Roscoe Merrill.

REGISTER OF DAY STUDENTS.

[Students in the S. A. T. C. are indicated by a (*). Students returning to school after discharge from Federal service are indicated by a dagger (†).]

SENIORS, CLASS OF 1919.

*Anderson, Arthur Julius, IV,	30 South Street, Concord, N. H.
*Brainerd, Carroll Lewis, IV,	146 Main Street, Bradford, Mass.
*Everett, Charles Arthur, IV,	199 Oakland Avenue, Methuen, Mass.
Gooding, Francis Earle, IV,	53 Abbott Street, Lawrence, Mass.
Gould, Norman Culver, VI,	Huntington, Mass.
†Hart, Arthur Norman, IV,	43 Swan Avenue, Lowell, Mass.
†Macdonald, Hector Graham, IV,	36 Varney Street, Lowell, Mass.
*Merrill, Gilbert Roscoe, VI,	96 Dingwell Street, Lowell, Mass.
Mullaney, John Francis, VI,	64 Oak Street, Lowell, Mass.
*Sanborn, Frank Morrison, VI,	West Kennebunk, Me.
*Stevens, Raymond Russell, IV,	12 Waldo Street, Dracut, Mass.
*Wells, Ai Edwin, VI,	178 Perry Street, Lowell, Mass.
Woo, Tsun-kwei, VI,	Shanghai, China.

JUNIORS, CLASS OF 1920.

Almquist, George John Edwin, I,	75 Quincy Street, Passaic, N. J.
Billings, Rupert Francis, IV,	71 Fourth Street, Lowell, Mass.
*Brainerd, Carl Emil, IV,	146 Main Street, Bradford, Mass.
*Brandt, Carl Dewey, VI,	85 French Street, Lowell, Mass.
Burbeck, Dorothy Maria, IV,	67 Loring Street, Lowell, Mass.
*Donovan, George, I,	34 Putnam Street, Somerville, Mass.
†Farley, Mortimer Thayer, III,	Central Avenue, Stonybrook, Mass.
Fleischmann, Meyer, IV,	144 Pearl Street, Manchester, N. H.
*Forsaitth, Charles Henry, VI,	56 Lock Street, Nashua, N. H.
*Goldman, Moses Hyman, IV,	259 Normandy Street, Dorchester, Mass.
Lewstein, Boris, IV,	68 Crawford Street, Lowell, Mass.
Mirsky, Leon Robert, II,	62 Lock Street, Nashua, N. H.
†Morris, Merrill George, IV,	644 Varnum Avenue, Lowell, Mass.
*Noone, Paul Leo, IV,	45 East Main Street, Merrimac, Mass.
*Quinlan, William Harold, VI,	104 Pearl Street, Somerville, Mass.
†Roberts, Herbert Chidsey, IV,	90 Myrtle Street, Shelton, Conn.
Roche, Henry Francis, III,	31 Webster Street, Bradford, Mass.
*Russell, John William, IV,	57 Bradford Street, Lawrence, Mass.
Sargent, Helen Anna (special), III,	18 May Street, Lowell, Mass.
Scanlon, Andrew Augustine, IV,	88 Eutaw Street, Lawrence, Mass.
*Scott, Gordon Maxwell, IV,	Weston Avenue, Madison, Me.
Smith, Sylvanus Paul, VI,	115 Prospect Street, Gloucester, Mass.
*Suhlke, Waldo Eric, IV,	63 Walnut Street, Leominster, Mass.
Wotkowicz, Michael Joseph, VI,	9 Hoosac Street, Adams, Mass.
*Zisman, Louis Samuel, IV,	59 Ruggie Street, Roxbury, Mass.

SOPHOMORES, CLASS OF 1921.

*Band, Roy Forrest, VI,	69 Lowden Avenue, West Somerville, Mass.
*Berlin, Louis, IV,	11 Harvard Street, Arlington, Mass.
*Bidwell, Leonard Fox, IV,	Glastonbury, Conn., R. F. D. No. 2.
*Boylston, Theodore Willmott, IV,	40 Maple Street, Milton, Mass.
Chang, Wen Chuan, VI,	Nantung, Kiangsu, China.
Chen, Shih-Ching, IV,	Shanghai, China.

Chou, Yen-Ting, VI,	147 Chengtu Road, Shanghai, China.
*Christofferson, Carl Alfred, IV,	Concord Junction, Mass.
*Clayton, Harold Edmund, VI,	11 Thomas Street, Williamstown, Mass.
*Cochran, Thomas Charles, IV,	15 West Central Street, Natick, Mass.
*Danahy, Joseph Philip, IV,	1077 Washington Street, Canton, Mass.
†Doyle, John Henry, II,	75 Main Street, North Brookfield, Mass.
*Ellis, Charles Albert, VI,	Chelmsford, Mass.
*Feinberg, Morris, IV,	249 Chambers Street, Boston, Mass.
*Goosetrey, Arthur, IV,	Crompton, R. I.
Goosetrey, John Thomas, IV,	Crompton, R. I.
*Hittinger, Richard, Jr., VI,	45 Elm Street, Belmont, Mass.
*Hodge, Harold Bradley, VI,	North Chelmsford, Mass.
†Jones, Nathaniel Erskine, I,	76 High Street, Newburyport, Mass.
*Karanfilian, John Hagop, VI,	505 Fletcher Street, Lowell, Mass.
*Lemire, Joseph Emile, VI,	776 Merrimack Street, Lowell, Mass.
†Leonard, Bryan, II,	1146 Commercial Street, East Weymouth, Mass.
*Marder, Harry, IV,	4 Auburn Street, Boston, Mass.
*Mathieu, Alfred Jules, II,	177 Hamlet Avenue, Woonsocket, R. I.
*Morrill, Arthur Lee, VI,	53 Main Street, Saco, Me.
*Nickerson, Benjamin Higgins, IV,	Box 44, Whitman, Mass.
*Orr, Andrew Stewart, IV,	10143 15th Street, Richmond Hill, N. Y.
*Phaneuf, Maurice Philip, III,	261 Main Street, Nashua, N. H.
*Precourt, Joseph Octave, VI,	417 Main Street, Woburn, Mass.
†Purcell, James, IV,	79 East Main Street, Webster, Mass.
Radford, Garland, II,	1517 Fannin Street, Houston, Texas.
Rice, Josiah Alfred, Jr., III,	10 Edwards Street, Southbridge, Mass.
*Robinson, Russell, VI,	11 Hawthorne Street, Bradford, Mass.
Rosch, Philip, III,	245 Canal Street, Lawrence, Mass.
*Royal, Louis Merry, VI,	91 Holland Street, Somerville, Mass.
*Sweet, Arthur Dutcher, VI,	76 Hanks Street, Lowell, Mass.
*Thompson, Arthur Robert, Jr., IV,	21 Loring Street, Lowell, Mass.
*Toepler, Carl, IV,	72 Woodland Street, Lawrence, Mass.
Turner, Florence Eliza (special), III,	92 Stevens Street, Lowell, Mass.
Wang, Yung-chi, VI,	Hangchou, China.
*Washburn, John Milton, Jr., IV,	266 Pine Street, Lowell, Mass.
*Worssam, Francis Herbert, IV,	13 Seymour Avenue, Lynn, Mass.
Yen, Yuan Shee, III,	Nantung, Kiangsu, China.

FRESHMEN, CLASS OF 1922.

†Abels, Charles August, III,	43 Nicollet Street, Lowell, Mass.
*Adams, Donald Francis, VI,	Littleton Street, Chelmsford, Mass.
*Amesbury, Frederick Alexander, VI,	23 Pitman Avenue, Wakefield, Mass.
*Anderson, Redfield Alfred, VI,	7 Lake Street, Concord, N. H.
*Bailey, Lester Harold,	14 Sidney Street, Lowell, Mass.
*Battye, Ralph Jillson,	271 Providence Street, Woonsocket, R. I.
*Beals, Ethan Alfred,	84 Marlboro Street, Lowell, Mass.
*Befito, Frank Henry,	340 Lowell Street, Lawrence, Mass.
*Bennett, Raymond Hutchins, VI,	69 Varney Street, Lowell, Mass.
*Bergeron, Joseph Albert, VI,	88 Ford Street, Lowell, Mass.
*Bernard, Joseph Harry,	239 Rue Girouard, St. Hyacinth, Que.
*Bird, Francis John, VI,	30 West Street, Attleboro, Mass.
*Brackett, Martin Richard, VI,	30 Dover Street, West Somerville, Mass.
Broadley, Frank Joseph, IV,	69 Mason Street, Salem, Mass.
*Brown, Gerald Marston, VI,	130 Mill Street, Agawam, Mass.
*Brown, Will George, Jr., IV,	115 Tenth Street, Lowell, Mass.
*Brown, William Joseph,	27 South Whipple Street, Lowell, Mass.
*Burnham, Robert Wesley, VI,	212 Washington Street, Gloucester, Mass.
Caffray, Raymond Ellery, I,	258 Main Street, Nashua, N. H.
Campbell, Alexander, VI,	601 East Eighth Street, South Boston, Mass.
Carter, Horace Ronald, VI,	502 Highland Avenue, Needham Heights, Mass.
Caya, Ferdinand Joseph, IV,	116 Greene Street, Woonsocket, R. I.
Chamberlin, Carey Judson, A.B. (special), VI,	12 Channing Street, Cambridge, Mass.

*Chase, Abbott, III,	94 Summer Street, Andover, Mass.
Cinqmars, Adelard David,	16 Endicott Street, Lowell, Mass.
*Clark, John Dewey,	166 Second Avenue, Albany, N. Y.
*Clasby, Arthur Edward, VI,	34 Bentley Street, Brighton, Mass.
Clifford, Albert Chester, VI,	39 Ainsworth Street, Roslindale, Mass.
Cluin, John Joseph, Jr., VI,	130 Fort Hill Avenue, Lowell, Mass.
*Coburn, Joseph Bradley, Jr., VI,	215 Mammoth Road, Lowell, Mass.
*Cockroft, Harold Arthur, VI,	7 Trent Street, Woonsocket, R. I.
Cole, Alexander Troy (special), III,	Rockingham, N. C.
Collins, Ralph Oliver, II,	23 Third Avenue, Gloversville, N. Y.
Condrin, William Daniel (special), III,	112 Sheridan Street, West Newton, Mass.
*Currier, Perley Phillips, VI,	504 Groveland Street, Haverhill, Mass.
*Decoteau, Ferdinand,	51 Boynton Street, Lowell, Mass.
Derby, Roland Everett, IV,	148 First Street, Lowell, Mass.
*Desaulniers, François,	63 Pinard Street, Manchester, N. H.
†Dexter, George Owen, Jr., VI,	54 High Street, Newburyport, Mass.
*Donahue, Frank Cournyn, VI,	497 Ward Street, Newton, Mass.
*Donohoe, John James,	228 Moody Street, Lowell, Mass.
*Downey, Hugh Frederick, IV,	56 Huntington Street, Lowell, Mass.
*Drapeau, Herve Leo, VI,	17 Mount Washington Street, Lowell, Mass.
*Dunigan, John Joseph,	Highland Avenue, North Chelmsford, Mass.
*Dupuis, Theodore Leo,	74 Beaulieu Street, Lowell, Mass.
*Falls, Roland Everard,	19 Hillside Street, Lowell, Mass.
*Flanagan, Paul Coolidge,	1 Branch Place, Lowell, Mass.
Forsyth, Harold Downes, IV,	8 Grant Road, Swampscott, Mass.
*Gilet, Albert James, VI,	809 Chelmsford Street, Lowell, Mass.
*Gillie, Stanley James, VI,	5 Clarendon Street, Gloucester, Mass.
*Gilligan, William Leonard,	130 Bowers Street, Lowell, Mass.
*Goodall, Frederick John, VI,	475 Stevens Street, Lowell, Mass.
*Goulet, Albert Alexander, VI,	241 Providence Street, Woonsocket, R. I.
*Greenberg, Archie, III,	47 Granite Street, Worcester, Mass.
*Gregoire, Joseph Francis,	11½ Hamilton Street, Southbridge, Mass.
*Grimes, Henry Dustin, IV,	116 Amesbury Street, Lawrence, Mass.
Gurklis, Charles (special), III,	Lowell, Mass.
†Haddad, Nassib (special), III,	157 High Street, Clinton, Mass.
Hadley, Wilfred Nourse, VI,	Box 35, Billerica, Mass.
*Hamlen, Walter Grafton,	66 Russell Street, New Bedford, Mass.
*Hammersley, George Vincent,	323 Concord Street, Lowell, Mass.
†Hargraves, Arthur Franklin (special), III,	30 East Main Street, Merrimac, Mass.
*Harris, Stanley Livingston, IV,	Glendale, R. I.
Harris, Theodore Connor, VI,	14 Webster Street, Haverhill, Mass.
*Hawley, Edgar,	48 Harvard Street, Lowell, Mass.
*Healy, Frederick Sullivan,	Second Street, Graniteville, Mass.
*Hillman, Ralph Greeley, VI,	R. F. D. No. 3, Nashua, N. H.
†Janson, Arthur Xavier (special), III,	36 Central Street, Haverhill, Mass.
*Jessop, Charles Clifford, VI,	49 Fay Street, Lowell, Mass.
†Kilduff, Frank Benedict, IV,	16 Alexander Street, Dorchester, Mass.
*Killoy, Joseph Francis,	4 Butterfield Street, Lowell, Mass.
*Kimball, Kenneth Sleeper, II,	29 Natalie Avenue, Melrose, Mass.
*King, Francis Gerald,	44 Thorndyke Street, Lawrence, Mass.
*Lavallee, Raymond George, VI,	790 Merrimack Street, Lowell, Mass.
*Luedeke, Charles Joseph, VI,	301 West 91st Street, New York City.
*McCauley, Frank Stanley, VI,	186 Washington Street, Cumberland, Md.
*McClure, Harold Edward,	70 Milton Street, Lawrence, Mass.
*McGowan, Henry Earl, VI,	36 Varney Street, Lowell, Mass.
*McGurn, George Leo,	110 South Walker Street, Lowell, Mass.
*McNeil, Ernest Francis, IV,	52 Freeman Street, Stoughton, Mass.
Mahoney, George Stephen, VI,	47 South Loring Street, Lowell, Mass.
*Mandell, Sampson Dewey, IV,	150 Meade Avenue, Passaic, N. J.
*Marble, Ralph Lincoln, VI,	23 Beaver Street, Worcester, Mass.
May, A. Wilfred, III,	525 West End Avenue, New York City.
Medina, Bernardo, VI,	Calle del Palo, Medellin, Colombia, S. A.
Medina, Pedro Roberto, IV,	Calle del Palo, Medellin, Colombia, S. A.
*Merritt, Henry Bartlett,	R. F. D. No. 1, Cohasset, Mass.

- *Meunier, Hector Joseph, IV, 149 Paradis Avenue, Woonsocket, R. I.
- Miller, Elmer William, VI, 19 Kingsville Avenue, Ashtabula, Ohio.
- *Moors, Edward Dana, VI, 104 Moore Street, Lowell, Mass.
- Munsey, Everard Virdell, IV, North Edgecomb, Me.
- *Murphy, Ambrose Joseph, 163 Winter Street, Fall River, Mass.
- *Murphy, George Edward, 66 Main Street, Lowell, Mass.
- *Nary, James Anthony, II, 226 Bradford Building, Pittsfield, Mass.
- †Neff, Howard Sutcliffe, II, 56 Chestnut Street, Ware, Mass.
- Nelson, Russell Sprague, VI, 483 Massasoit Road, Worcester, Mass.
- Neugroschl, Sigmund Israel, VI, 14 Walcott Street, Dorchester, Mass.
- *Nichols, Fredric William, VI, 522 South Main Street, Woonsocket, R. I.
- *Parcher, Norman Forest, 49 Park Street, Dexter, Me.
- †Parsons, Brackett, VI, 3 Robertson Street, East Milton, Mass.
- *Pierce, Raymond Henry, VI, 17 Atherton Street, Somerville, Mass.
- *Porteck, Henry George, 208 Pleasant Street, Lowell, Mass.
- Poteat, John Robinson, S.B. (special), VI, 39 Strathmore Road, Brookline, Mass.
- †Potter, Charles Diman, IV, 39 Garden Road, Valleyfield, Que.
- *Pratt, Donald Harriman, IV, 142 First Street, Lowell, Mass.
- Pratt, Herbert Langdon, A.B. (special), VI, 45 Everett Street, Newton Center, Mass.
- *Quill, John Joseph, 85 Ellis Avenue, Lowell, Mass.
- *Quinn, Francis Joseph, VI, 18 Chambers Street, Lowell, Mass.
- *Reed, Randolph Bates, 243 Westford Street, Lowell, Mass.
- *Rich, Harry Porter, 95 India Street, Portland, Me.
- Rich, Milton Scott, VI, 12 Circuit Street, Medford, Mass.
- *Richardson, Philip Alfred, IV, 161 School Street, Lowell, Mass.
- *Richey, Irving Graves, Jr. (special), III, 186 Sherman Avenue, New Haven, Conn.
- *Rosen, Philip, IV, 6 Baird Street, Dorchester, Mass.
- *Ruger, Carl Ernest, IV, 572 Park Place, Brooklyn, N. Y.
- *Rydin, Spencer Charles Alfred, 9 Jane Street, Manchester, N. H.
- *Sargent, Walter Ambrose, VI, 19 Chester Square, Gloucester, Mass.
- *Schwarz, Herman Louis, IV, 26 North Terrace Avenue, Mount Vernon,
N. Y.
- *Scott, Walter Irving, II, 820 Main Street, Greenwood, Mass.
- *Service, Fred Leslie, I, South Willington, Conn.
- *Service, Louis Bayard, South Willington, Conn.
- Shanahan, James Edward, VI, 212 Market Street, Amsterdam, N. Y.
- *Shea, Henry John, 42 Greenville Street, Somerville, Mass.
- *Silk, Nelson Miles, R. F. D. No. 1, Chelmsford, Mass.
- *Smith, Herbert Jeffers, VI, 56 Parks Street, Ware, Mass.
- Southwick, Charles Hudson, IV, 335 South Main Street, Woonsocket, R. I.
- *Stevens, Harold Wilbur, III, 145 Sanders Avenue, Lowell, Mass.
- Stilwell, Harold Tower, B.S. (special), VI, 33 East Highland Avenue, West Somerville,
Mass.
- *Sturtevant, Walter George, IV, 32 Brookside Street, Lowell, Mass.
- *Sugden, Francis Mitchell, II, 10 Oak Street, Sanford, Me
- *Sullivan, Daniel Francis, II, 15 Landers Street, Somerville, Mass.
- Sussman, Lazarus, IV, 459 Islington Street, Portsmouth, N. H.
- *Sutton, Allen Earl, I, 29 Mahaiwe Street, Great Barrington, Mass.
- Sweetser, Homer Loring, A.B. (special), VI, 15 Goddard Avenue, Brookline, Mass.
- Symmes, Dean Whiting, IV, 10 Madison Avenue, Winchester, Mass.
- *Thomas, Frederic Walsh, 85 Eleventh Street, Lowell, Mass.
- Townsend, Wendell, I, 535 Beacon Street, Boston, Mass.
- Trask, Walter Edwin, IV, 63½ Rowe Street, Melrose, Mass.
- *True, William Clifford, VI, 1550 Forest Avenue, Portland, Me.
- †Vogel, James Parker, VI, Tuxedo Park, N. Y.
- *White, George Arthur, 1221 Middlesex Street, Lowell, Mass.
- *Woodhead, Joseph Arthur, VI, Smith Avenue, Chelmsford, Mass.
- Worthen, Clifford Tasker, IV, 267 Groveland Street, Haverhill, Mass.

ALPHABETICAL LIST OF GRADUATES.

[For graduates arranged according to classes see page 99.]

The following list has been corrected in accordance with information received previous to March 1, 1919. Any information regarding incorrect or missing addresses is earnestly solicited.

B.T.C. indicates the degree of Bachelor of Textile Chemistry; B.T.D. indicates the degree of Bachelor of Textile Dyeing; B.T.E. indicates the degree of Bachelor of Textile Engineering; D indicates a diploma; C indicates a certificate (covering a partial course only).

- Abbot, Edward Moseley, II, '04 (D).** Vice-President and Agent, Abbot Worsted Company, Graniteville, Mass.
- Abbott, George Richard, II, '08 (D).** Andover, Mass.
- Adams, Floyd Willington, VI, '16 (B.T.E.).** Mechanical Engineer, The Barrett Company, 17 Battery Place, New York City.
- Adams, Henry Shaw, I, '05 (D).** Treasurer and Secretary, The Springstein Mills, Chester, S. C.
- Adams, Tracy Addison, IV, '11 (D).** Division Superintendent, Arnold Print Works, North Adams, Mass.
- Albrecht, Charles Henry, IV, '17 (B.T.C.).** Chemist, Wood Worsted Mills, Lawrence, Mass.
- Arienti, Peter Joseph, IV, '19 (D).** Chief Chemist, Sayles Bleacheries and Glenlyon Dye Works, Saylesville, R. I.
- Arundale, Henry Barnes, II, '07 (D).** With United States Conditioning and Testing Company, 340 Hudson Street, New York City.
- Avery, Charles Henry, II, '06 (D).** Died January, 1913.
- Bailey, Joseph W., I, '99 (D).** Agent, Butler Mill, New Bedford, Mass.
- Bailey, Walter James, IV, '11 (D).** With Bayburn Cleansing Shop, Cambridge, Mass.
- Baker, William John, IV, '16 (D).** Guncotton Supervisor, E. I. du Pont de Nemours & Co., City Point, Va.
- Baldwin, Arthur Lincoln, IV, '00 (D).** Chemist, Monarch Chemical Laboratory, Lowell, Mass.
- Baldwin, Frederick Albert, II, '04 (D).** Vice-President and Secretary, Walter Blue & Co., Ltd., Sherbrooke, Que.
- Ballard, Horace W. C. S., IV, '08 (D).** Died Sept. 28, 1918.
- Barlofsky, Archie, VI, '17 (B.T.E.).** Quartermaster's Depot, Cambridge, Mass.
- Barr, I. Walwin, I, '00 (D).** Manager, Mill Department, F. U. Stearns & Co., 7-9 Thomas Street, New York City.
- Bennett, Edward Howard, II, '03 (C).** Publisher, American Wool and Cotton Reporter, 530 Atlantic Avenue, Boston, Mass.
- Bennett, Herbert Bowen, II, '13 (D).** Mill Agent, Foster & Stewart Company, Inc., Willimantic, Conn.
- Berry, Wilbur French, II, '17 (D).** Lieutenant, Field Artillery, Battery F, 102d Regiment; home address, 30 Forest Street, Worcester, Mass.
- Bigelow, Prescott Fenno, II, '12 (D).** Died Oct. 14, 1918.
- Blaikie, Howard Mills, II, '11 (D).**
- Blake, Parker Gould, VI, '14 (D).** Second Lieutenant, Quartermaster's Corps, Boston, Mass.; home address, 9 Remington Street, Cambridge, Mass.
- Bloom, Wilfred Nathaniel, IV, '03 (D).** Died Aug. 17, 1918.
- Bodwell, Henry Albert, II, '00 (D).** Superintendent, Smith & Dove Manufacturing Company, Andover, Mass.
- Boyd, George Andrew, I, '05 (D).** Accountant, Harmony Mills, 201 Devonshire Street, Boston, Mass.

- Bradford, Roy Hosmer, II, '06 (D).** Assistant Superintendent (Flax Mill) Smith & Dove Manufacturing Company, Andover, Mass.
- Bradley, Raymond Frost, VI, '14 (D).** Garage Proprietor, Twin Light Garage Company, 267 East Main Street, Gloucester, Mass.
- Bradley, Richard Henry, V, '01 (C).** Overseer, Wamsutta Manufacturing Company, New Bedford, Mass.
- Brainerd, Arthur Travena, IV, '09 (D).** Manager of Chicago office, H. A. Metz & Co., 317 North Clark Street, Chicago, Ill.
- Brannen, Leon Vincent, III, '07 (C).** 300 North 40th Street, Philadelphia, Pa.
- Brickett, Chauncy Jackson, II, '00 (D).** Principal, School of Textiles, International Correspondence School, Scranton, Pa.
- Brickett, Raymond Calvin, II, '14 (D).** Overseer, M. T. Stevens & Sons Company (Marland Mills), Andover, Mass.
- Brown, Rollins Goldthwaite, IV, '12 (D).** Superintendent of Cotton Mill, White Mills of New Hampshire, West Peterboro, N. H.
- Buchan, Donald Cameron, II, '01 (D).** Assistant Superintendent, M. T. Stevens & Sons Company, North Andover, Mass.
- Burnham, Frank Erwin, IV, '02 (D).** Manager, Dyestuff and Intermediate Department, Marden, Orth & Hastings Company, Newark, N. J.
- Burrage, Katharine C., IIb, '99 (C).** Died May 16, 1914.
- Cameron, Elliott Francis, IV, '11 (D).** Chief Field Adjuster, Bureau of War Risk Insurance, United States Treasury Department, Washington, D. C.
- Campbell, Laura Etta, IIb, '00 (C).** Deceased.
- Campbell, Louise Porter, IIb, '03 (C).** 10 Sheffield Road, Winchester, Mass.
- Campbell, Orison Sargent, II, '03 (D).** Superintendent, Canadian Consolidated Felt Company, Ltd., Kitchener, Ont.
- Carr, George Everett, I, '05 (D).** Efficiency Engineer, National Carbon Company (Factory B), Clarksburg, W. Va.
- Carter, Robert Albion, IV, '02 (D).** Assistant Sales Manager, Dyestuff Sales, Philadelphia office, E. I. Du Pont de Nemours & Co., 504 Land Title Building, Philadelphia, Pa.
- Cary, Julian Clinton, VI, '10 (D).** Branch Manager, American Mutual Liability Insurance Company, 209 Pearl Street, Hartford, Conn.
- Chamberlin, Frederick Ellery, I, '03 (D).** Overseer of Spinning, Monument Mills, Housatonic, Mass.
- Chandler, Proctor Ralph, IV, '11 (D).** With Index Knitting Company, 394 Newton Street, Waltham, Mass.
- Chisholm, Lester Bury, I, '11 (D).** General Superintendent, Everlastik, Inc., 52 Chauncy Street, Boston, Mass.
- Church, Charles Royal, II, '06 (C).**
- Churchill, Charles Whittier, III, '06 (D).** Manufacturer, 146 Fletcher Street, Lowell, Mass.
- Clapp, Frank Austin, II, '04 (D).** Salesman, Dunmore Worsted Company, Inc., 215 4th Avenue, New York City.
- Clark, Earl William, IV, '18 (B.T.C.).** With National Aniline and Chemical Company, Buffalo, N. Y.
- Clark, Thomas Talbot, II, '10 (D).** Assistant Manager and Treasurer, Talbot Mills, North Billerica, Mass.
- Cleary, Charles Joseph, II, '13 (D).** First Lieutenant, Aviation Section, Signal Corps; home address, 1493 Tremont Street, Boston, Mass.
- Clogston, Raymond B., IV, '04 (D).** Superintendent of Dyeing, Merrimack Manufacturing Company, Lowell, Mass.
- Coan, Charles Bisbee, IV, '12 (D).** Chemist, Royal Hasco Company, 19th Street, Weehawken, N. J.
- Colby, James Tracy, VI, '16 (D).** With F. C. Huyck & Sons, Albany, N. Y.
- Cole, Edward Earle, IV, '06 (D).** Financial Reporter, Bradstreet Company, Boston, Mass.
- Cole, James Thomas, II, '05 (D).** Superintendent, Cambridge Industries for Blind, Massachusetts Commission for the Blind, 686 Massachusetts Avenue, Cambridge, Mass.
- Coman, James Groesbeck, I, '07 (D).** General Manager, Tipton Cotton Mills, Covington, Tenn.
- Conant, Harold Wright, I, '09 (D).** Manager, Conant, Houghton & Co., Littleton, Mass.
- Conant, Richard Goldsmith, I, '12 (D).** First Lieutenant, Field Artillery, A. E. F., France; home address, Littleton, Mass.
- Conklin, Jennie Grace, IIb, '05 (C).** 93 Binney Street, Roxbury, Mass.

- Cook, Kenneth Bartlett, I, '13 (D).** Superintendent, Textile Section, United States Rubber Company, 122 Adams Street, Newark, N. J.
- Cosendai, Edwin Frederick Ernest, IV, '15 (B.T.D.).** Superintendent, Nitro Products Company, Saginaw, Mich.
- Craig, Albert Wood, IV, '07 (D).** With the Pacific Mills, Lawrence, Mass.
- Craig, Clarence Eugene, III, '02 (D).** Farming, Derry, N. H.
- Creese, Guy Talbot, IV, '14 (D).** Chemist, Creese & Cook Company, Danvers, Mass.
- Culver, Ralph Farnsworth, IV, '04 (D).** President, Culver Dye Company, Inc., and with Drake & Co., Turks Head Building, Providence, R. I.
- Cummings, Edward Stanton, VI, '16 (D).** Ensign, United States Naval Reserve Force; home address, 29 Huntington Street, Lowell, Mass.
- Curran, Charles Ernest, III, '02 (C).** Head Designer, Wood Worsted Mills, Lawrence, Mass.
- Currier, Herbert Augustus, I, '06 (D).** New York Manager, Cotton Yarn Department, Wm. Whitman Company, Inc., 25 Madison Avenue, New York City.
- Currier, John Alva, II, '01 (D).** Superintendent, Pentucket Mills (M. T. Stevens & Sons Company), Haverhill, Mass.
- Curtis, Frank Mitchell, I, '06 (D).** Lumber Merchant, Wm. Curtis Sons Company, 30 Eustis Street Road, Mattapan Station, Mass.
- Curtis, William Leavitt, II, '05 (C).**
- Cutler, Benjamin Winthrop, Jr., III, '04 (D).**
- Cuttle, James H., II, '99 (D).**
- Dalton, Gregory Smith, IV, '12 (D).** Assistant Superintendent, Mansfield Tire and Rubber Company, Mansfield, Ohio.
- Davieau, Alfred Edward, VI, '16 (D).** Assistant Material Engineer, Bureau of Construction and Repair, Navy Department, Washington, D. C.
- Davieau, Arthur Napoleon, VI, '13 (D).** With F. C. Huyck & Sons, Albany, N. Y.
- Davis, Alexander Duncan, VI, '14 (B.T.E.).** Supervising Draftsman, Springfield Armory, Springfield, Mass.
- Dearborn, Roy, VI, '13 (D).** Purchasing Agent, Brightwood Manufacturing Company, North Andover, Mass.
- Dearth, Elmer Ellridge, IV, '12 (D).** Assistant Treasurer, New Jersey Carspring and Rubber Company, Jersey City, N. J.
- de Sa, Francisco, VI, '18 (B.T.E.).** Avenue da Graça, Bahia, Brazil.
- Dewey, James French, II, '04 (D).** Superintendent of Woolen Mills, A. G. Dewey Company, Quechee, Vt.
- Dewey, Maurice William, II, '11 (D).** Inspector of Mortgages, National Life Insurance Company, Montpelier, Vt.
- Dillon, James Henry, III, '05 (D).** Landscape and Architectural Designer, Park and Recreation Department, Boston, Mass.
- Donald, Albert Edward, II, '04 (D).** Agent, Hecla Mill (American Woolen Company), Uxbridge, Mass.
- Dorr, Clinton Lamont, VI, '14 (D).** With Stark Mills, Manchester, N. H.
- Duval, Joseph Edward, II, '10 (D).** Philadelphia Representative, Punch & Predmore, Inc., 308 Chestnut Street, Philadelphia, Pa.
- Dwight, John Francis, Jr., II, '08 (D).** Market Gardener, Holliston, Mass.
- Echmalian, John Gregory, VI, '16 (B.T.E.).** Draftsman, The Vlc hek Tool Company, Cleveland, Ohio.
- Ehrenfried, Jacob Benjamin, II, '07 (C).** With George Ehrenfried Company, Lewiston, Me.
- Elliot, Gordon Baylies, II, '12 (D).** First Lieutenant, Ordnance Department, Washington, D. C.; home address, Grafton, Mass.
- Emerson, Frank Warren, II, '03 (D).** Agent, Moosup Mills, Moosup, Conn.
- Engstrom, Karl Emil, VI, '12 (D).**
- Evans, Alfred Whitney, III, '03 (D).**
- Evans, William Robinson, III, '03 (D).** Foreman, Durgin Shoe Company, Haverhill, Mass.
- Ewer, Nathaniel Trull, IV, '01 (D).** Chemist, American Dyewood Company, Chester, Pa.
- Fairbanks, Almonte Harrison, II, '09 (D).** Treasurer and General Manager, Middlesex Knitting Company, Wakefield, Mass.
- Farmer, Chester Jefferson, IV, '07 (D).** Associate Professor of Chemistry, Northwestern University Medical School, Chicago, Ill.

- Farnsworth, Harold Vincent, VI, '16 (B.T.E.).** Ensign, Pay Corps, United States Naval Reserve Force, Clothing Depot, Navy Yard, Charleston, S. C.
- Farr, Leonard Schaefer, II, '08 (D).** Assistant Superintendent, No. 2 Mill, Farr Alpaca Company, Holyoke, Mass.
- Fels, August Benedict, II, '99 (D).** Manufacturer, William Fels, Inc., 148 West 23d Street, New York City.
- Ferguson, Arthur Feiling, I, '03 (D).**
- Ferguson, William Gladstone, III, '09 (D).** In charge of Efficiency Department, Ludlow Manufacturing Associates, Ludlow, Mass.
- Finlay, Harry Francis, IV, '10 (D).** With National Aniline and Chemical Company, Buffalo, N. Y.
- Fisher, Russell Todd, VI, '14 (D).** With Marshall Field & Co., New York City.
- Fiske, Starr Hollinger, II, '09 (D).** Assistant Superintendent, Cloth Division, D. Goff & Son, Pawtucket, R. I.
- Fitzgerald, John Francis, IV, '18 (B.T.C.).** Second class Machinist's Mate, United States Naval Reserve Force, Chemical Laboratory, Navy Yard, Boston, Mass.
- Fleming, Frank Everett, IV, '06 (D).** Assistant Dyer and Finisher, Goodall Worsted Company, Sanford, Me.
- Fletcher, Roland Hartwell, VI, '10 (D).** Sergeant, 57th Aero Construction Squadron, A. E. F.; home address, Littleton Common, Mass.
- Flynn, Thomas Patrick, IV, '11 (D).** With E. I. du Pont de Nemours & Co., Wilmington, Del.
- Ford, Edgar Robinson, IV, '11 (D).** Finisher, Sayles Finishing Plants, Saylesville, R. I.
- Forsaith, Ralph Allan, VI, '16 (B.T.E.).** Chief Machinist's Mate, United States Navy; home address, 56 Lock Street, Nashua, N. H.
- Foster, Boutwell Hyde, VI, '17 (B.T.E.).** Textile Engineer, Textile Section, United States Rubber Company, 122 Adams Street, Newark, N. J.
- Foster, Clifford Eastman, II, '01 (D).** Superintendent, Superior Thread and Yarn Company, Philadelphia, Pa.
- Frost, Harold Benjamin, II, '12 (D).** Quartermaster's Corps, Cambridge, Mass.; home address, 87 Highland Road, Somerville, Mass.
- Fuller, Allen Reed, IV, '17 (B.T.C.).** Chemist, E. I. du Pont de Nemours & Co., Lodi Dye Works, Lodi, N. J.
- Fuller, George, I, '03 (D).** Associate Editor and Fabric Expert, F. P. Bennett & Co., 2 Rector Street, New York City.
- Gadsby, Arthur Norton, II, '13 (D).** Assistant Physicist, Bureau of Standards, Washington, D. C.
- Gahm, George Leonard, II, '06 (D).** Superintendent, Yarn Department, Wood Worsted Mills, Lawrence, Mass.
- Gainey, Francis William, IV, '11 (D).** With National Aniline and Chemical Company, Buffalo, N. Y.
- Gale, Harry Laburton, III, '10 (D).** Manager, Fancy Goods Department, Wilmerding & Bissett, 170 Fifth Avenue, New York City.
- Gay, Olin Dow, II, '08 (D).** Superintendent, Gay Brothers Company, Cavendish, Vt.
- Gerrish, Henry Kilborn, III, '16 (D).** Lieutenant, Camp Zachary Taylor, Kentucky.
- Gerrish, Walter, III, '03 (D).** With American Felt Company, Hyde Park, Mass.
- Gillon, Sara Agnes, IIIB, '06 (C).** 26 Hanks Street, Lowell, Mass.
- Goldberg, George, VI, '10 (D).** Draftsman, Watertown Arsenal, Watertown, Mass.
- Goodhue, Amy Helen, IIIB, '00 (C).** See Harrison, Mrs. Arthur.
- Gyzander, Arne Kolthoff, IV, '09 (D).** 48 Orient Street, Malden, Mass.
- Hadley, Walter Eastman, IV, '08 (D).** Chemist, The Clark Thread Company, Newark, N. J.
- Halsell, Elam Ryan, I, '04 (C).**
- Hardy, Philip Lewis, VI, '10 (D).** Contractor, Andover, Mass.
- Harmon, Charles Francis, I, '99 (D).** 86 Kingsland Avenue, Elmhurst, L. I.
- Harrington, Thomas, IV, '15 (D).** Chemist and Foreman, R. M. S. Leather Company, 36 Broadway, Salem, Mass.
- Harris, Charles Edward, I, '05 (D).** Owner and Manager, Harris Wheel Company, Easthampton, Mass.
- Harris, George Simmons, I, '02 (C).** Superintendent, Lanett Cotton Mills, and Agent, Lanett Bleachery and Dye Works, Lanett, Ala.
- Harrison, Mrs. Arthur (Goodhue, Amy Helen), IIIB, '00 (C).** Dracut, Mass.

- Haskell, Spencer Howard, II, '07 (D).** Lieutenant, Aviation Signal Corps; home address, 56 Grove Street, Worcester, Mass.
- Haskell, Walter Frank, IV, '02 (D).** Overseer of Dyeing, Dana Warp Mills, Westbrook, Me.
- Hassett, Paul Joseph, IV, '12 (D).** Second Lieutenant, Quartermaster's Corps, United States Army; home address, 22 Vernon Street, Fitchburg, Mass.
- Hathorn, George Wilmer, IV, '07 (D).** Chemist, Lawrence Gas Company, Lawrence, Mass.
- Hay, Ernest Crawford, II, '11 (D).** Superintendent, Monomac Spinning Company, Lawrence, Mass.
- Hendrickson, Walter Alexander, II, '11 (D).** With Wiley, Bickford, Sweet Company, 60 King Street, Worcester, Mass.
- Hennigan, Arthur Joseph, II, '06 (D).** New England Representative, Cox & Schreiber, 31 Bedford Street, Boston, Mass.
- Hildreth, Harold William, II, '07 (D).** Corporal, 28th Engineers.
- Hintze, Thomas Forsyth, I, '06 (C).**
- Holden, Francis Crawford, IV, '09 (D).** Chemist and Dyer, Chelsea Fiber Mills, 1155 Manhattan Avenue, Brooklyn, N. Y.
- Holgate, Benjamin, III, '02 (C).** Head of Planning and Schedule Department, Boott Mills, Lowell, Mass.
- Hollings, James Louis, I, '05 (D).** Buyer and Converter (Cotton Goods), W. R. Grace & Co., 7 Hanover Square, New York City.
- Holmes, Otis Milton, VI, '13 (B.T.E.).** Draftsman, United Shoe Machinery Company, Beverly, Mass.
- Hood, Leslie Newton, IV, '12 (D).** Chemist, D. Goff & Sons, Pawtucket, R. I.
- Hook, Russell Weeks, IV, '05 (D).** Chemist, Arthur D. Little, Inc., 30 Charles River Road, Cambridge, Mass.
- Horsfall, George Gordon, II, '04 (C).** Assistant Dyer, Interwoven Mills, Inc., Martinsburg, W. Va.
- Horton, Chester Temple, VI, '14 (B.T.E.).** Corporal, Aviation Corps; home address, Wilmington, Mass.
- Howarth, Charles Lincoln, IV, '17 (B.T.C.).** Chemist, Zone Supply Offices, Quartermaster's Corps, Boston, Mass.
- Howe, Woodbury Kendall, I, '10 (D).** Assistant Superintendent, Merrimack Manufacturing Company, Lowell, Mass.
- Hoyt, Charles William Henry, IV, '07 (D).**
- Hubbard, Ralph King, IV, '11 (D).** Superintendent, L. W. Packard & Co., Ashland, N. H.
- Huising, Geronimo Huerva, I, '08 (D).** Farmer, San José Estate and Mindoro Company, San José, Mindoro, P. I.
- Hunt, Chester Lansing, III, '05 (C).** With Waltham Watch Company, Waltham, Mass.
- Hunton, John Horace, II, '11 (D).** Treasurer and General Manager, Newichawanick Company, South Berwick, Me.
- Hurtado, Leopoldo, Jr., VI, '10 (D).** General Manager, Hurtado & Co., Uruapan, Michoacán, Mex.
- Hutton, Clarence, III, '03 (C).** Editor, "Textile World Journal," 144 Congress Street, Boston, Mass.
- Irvine, James Andrew, VI, '17 (B.T.E.).** Sales Manager, Textile Department, Rodney Hunt Machine Company, Orange, Mass.
- Jelleme, William Oscar, I, '10 (D).** Technical Superintendent, Brighton Mills, Passaic, N. J.
- Jenckes, Leland Aldrich, VI, '08 (D).** Deceased.
- Johnson, Arthur Kimball, IV, '13 (D) (B.S. 1917, Massachusetts Institute of Technology).** Instructor in Chemistry, Lowell Textile School, Lowell, Mass.
- Jones, Everett Amos, III, '05 (D).** Superintendent and Secretary, Nye & Wait Kilmarnock Corporation, Auburn, N. Y.
- Jury, Alfred Elmer, IV, '04 (D).** Director, Textile Section, United States Rubber Company, 1790 Broadway, New York City.
- Kay, Harry Pearson, II, '09 (D).** With Richard L. Wallace & Co., 120 Chestnut Street, Philadelphia, Pa.
- Kent, Clarence LeBaron, III, '06 (C).** Salesman, Standard Oil Company, North Andover, Mass.
- Keough, Wesley Lincoln, II, '10 (D).** Assistant Superintendent, Massachusetts Mohair Plush Company, Lowell, Mass.

- Kingsbury, Percy Fox, IV, '01 (D).** Head of Color Department, Passaic Print Works, Passaic, N. J.
- Knowland, Daniel Power, IV, '07 (D).** Chemist, Geigy Company, 89 Barclay Street, New York City.
- Lakeman, Fannie Shillaber, IIb, '00 (C).** 9 Summer Street, Salem, Mass.
- Lamb, Arthur Franklin, II, '10 (D).** In business, cleansing and dyeing, 297 Main Street, Rockland, Me.
- Lamont, Robert Laurence, II, '12 (D).** Representative, Mercury Manufacturing Company of Chicago, Ill., 10 High Street, Boston, Mass.
- Lamprey, Leslie Balch, IV, '16 (B.T.D.).** 173 Parker Street, Lawrence, Mass.
- Lamson, George Francis, I, '00 (D).** With Morton Company, Worcester, Mass.
- Lane, John William, I, '06 (C).**
- Lane, Oliver Fellows, IV, '15 (B.T.D.).** Chemist, Russia Cement Company, Gloucester, Mass.
- Laughlin, James Knowlton, III, '09 (D).** 6313 Sherman Street, Germantown, Philadelphia, Pa.
- Leach, John Pelopidas, I, '00 (C).** Farming, Mosby Hall Farm, Littleton, N. C.
- Lee, William Henry, II, '05 (C).** Treasurer, Lee's Wool Shop, Smith Building, Holyoke, Mass.
- Leitch, Harold Watson, IV, '14 (B.T.D.).** Chemist, The Brightwood Manufacturing Company, North Andover, Mass.
- Levi, Alfred Sandel, IV, '09 (D).** Assistant Superintendent, Liondale Bleach, Dye and Print Works, Rockaway, N. J.
- Lewis, LeRoy Clark, IV, '08 (D).** Raw Silk Inspector, Wilkes-Barre Silk Company, Pater-son, N. J.
- Lewis, Walter Scott, IV, '05 (D).** Captain, Engineering Division, Ordnance Department, Washington, D. C.
- Lillis, Marvin Hale, IV, '14 (D).** With the Brightwood Manufacturing Company, North Andover, Mass.
- Lucey, Edmund Ambrose, II, '04 (D).** Industrial Engineer, H. L. Gantt, 2905 Singer Building, New York City.
- McCool, Frank Leslie, IV, '10 (D).** Dye Salesman, S. R. David & Co., Inc., 100 Purchase Street, Boston, Mass.
- McDonnell, William Henry, I, '06 (C).** Lawyer, McDonnell, Drew & White, 40 Court Street, Boston, Mass.
- McGowan, Frank Robert, VI, '15 (B.T.E.).** Textile Technologist, Bureau of Standards, Washington, D. C.
- Mackay, Stewart, III, '07 (D).** In the office of Inspector of Hull Material, United States Navy Department, Boston, Mass.
- McKenna, Hugh Francis, IV, '05 (D).** Assistant Manager, Chicago Branch, United Indigo and Chemical Company, Ltd., 218 West Kenzie Street, Chicago, Ill.
- MacPherson, Wallace Angus, III, '04 (D).** Designer, Wuskanut Mills, Farnumsville, Mass.
- Mailey, Howard Twisden, II, '08 (D).** Assistant Superintendent, Worsted Department, Pacific Mills, Lawrence, Mass.
- Manning, Frederick David, IV, '10 (D).** With H. L. Gantt, 2905 Singer Building, New York City.
- Marinel, Walter Newton, I, '01 (D).** Auto Mechanic, George C. Moore Wool Scouring Mills, North Chelmsford, Mass.
- Martin, Harry Warren, IV, '11 (D).** Chemist, Hood Rubber Company, Watertown, Mass.
- Mason, Archibald Lee, VI, '09 (D).**
- Mather, Harold Thomas, VI, '13 (D).** First Lieutenant, Coast Artillery Corps, U. S. R.; home address, 136 Hanks Street, Lowell, Mass.
- Matthews, Elmer Clark, II, '17 (D).** Second Lieutenant, Field Artillery, 102d Regiment, A. E. F.; home address, 55 Washington Street, Hudson, Mass.
- Mauersberger, Herbert Richard Carl, III, '18 (D).** Cotton Yarn Salesman, C. M. Plowman & Co., 106 Chestnut Street, Philadelphia, Pa.
- Meadows, William Ransom, I, '04 (D).** Agent, George H. McFadden & Brother of Philadelphia, Milan, Italy.
- Meek, Lotta, IIb, '07 (C).** See Parker, Mrs. Herbert L.
- Merchant, Edith Clara, IIb, '00 (C).** Supervisor of Drawing, Tewksbury-Draut District; home address, 268 Westford Street, Lowell, Mass.
- Merrill, Allan Blanchard, IV, '11 (D).** Chemist, B. F. Goodrich Company, Akron, Ohio.

- Merriman, Earl Cushing, II, '07 (D). Died Sept. 30, 1918.
- Midwood, Arnold Joseph, IV, '05 (D). Salesman, I. Levinstein & Co., 74 India Street, Boston, Mass.
- Minge, Jackson C., I, '01 (C).
- Molloy, Francis Henry, II, '16 (D). Assistant Designer, Assabet Mill, Maynard, Mass.
- Moore, Everett Byron, I, '05 (D). Vice-President and Manager, Chadbourne & Moore, Inc., Chelsea, Mass.
- Moore, Karl Remick, IV, '11 (D). Sergeant, Chemical Warfare Service; home address, 110 Morningside Drive, New York City.
- Moorhouse, William Roy, IV, '01 (D). Chemist, National Aniline and Chemical Company, Inc., 113 High Street, Boston, Mass.
- Morrill, Howard Andrew, VI, '16 (D). With Lockwood, Greene & Co., Boston, Mass.
- Morrison, Fred Clifton, I, '03 (D). Assistant Superintendent, Levi W. Phelps, Ayer, Mass.
- Mullen, Arthur Thomas, II, '09 (D). Designer, Sutton's Mill, North Andover, Mass.
- Munroe, Sydney Philip, I, '12 (D). Assistant Superintendent, Wamsutta Mills, New Bedford, Mass.
- Murray, James, IV, '13 (D). Works Manager, Crescent Color and Chemical Works, Inc., Dunellen, N. J.
- Murray, James Andrew, II, '10 (D). Clerk, Talbot Clothing Company, 403 Washington Street, Boston, Mass.
- Najar, G. George, IV, '03 (D). Overseer of Dyeing, Monument Mills, Housatonic, Mass.
- Newall, John Douglas, IV, '09 (D). Department Superintendent, Sayles Bleacheries, Saylesville, R. I.
- Newcomb, Guy Houghton, IV, '06 (C). Assistant Manager, E. I. du Pont de Nemours & Co., 1055 McCormick Building, Chicago, Ill.
- Neyman, Julius Ellis, IV, '15 (B.T.D.). Chemist, United States Worsted Company, North Chelmsford, Mass.
- Niven, Robert Scott, VI, '12 (D). Draftsman, General Electric Company, Lynn, Mass.
- Nichols, Raymond Elmore, VI, '10 (D). Superintendent, Lowell Bleachery, St. Louis, Mo.
- O'Brien, Philip Francis, II, '15 (D). Cost Accountant, Frederick Bond Cherrington and Associates, 79 Milk Street, Boston, Mass.
- O'Connell, Clarence Edward, IV, '11 (D). Second Hand, Boston Manufacturing Company, Waltham, Mass.
- O'Connor, Lawrence Dennis, VI, '17 (D). Machinist, Fore River Shipbuilding Company, Quincy, Mass.
- O'Donnell, John Delaney, I, '04 (C).
- O'Hara, William Francis, IV, '04 (C).
- Palais, Samuel, IV, '18 (B.T.C.). Textile Chemist, Quartermaster's Department, United States Army, Boston, Mass.
- Parker, B. Moore, I, '01 (D). In business, West Raleigh, N. C.
- Parker, Everett Nichols, I, '05 (D). Manufacturer, Parker Spool and Bobbin Company, 27-53 Middle Street, Lewiston, Me.
- Parker, Harry Carmi, III, '00 (C). Salesman, George Lincoln Parker, 100 Boylston Street, Boston, Mass.
- Parker, Mrs. Herbert L. (Meek, Lotta L.), IIIB, '07 (C). 4 Brookside Circle, Auburn, Me.
- Parkis, William Lawton, I, '09 (D). Investigator, Cheney Brothers, South Manchester, Conn.
- Peabody, Roger Merrill, II, '16 (D). Second Lieutenant, 74th Infantry, Camp Devens, Massachusetts.
- Pearson, Alfred Henry, IV, '11 (D). Salesman, Dunker & Perkins Company, 287 Atlantic Avenue, Boston, Mass.
- Pease, Chester Chapin, I, '09 (D). Superintendent of Manufacturing, Textile Section, United States Rubber Company, 122 Adams Street, Newark, N. J.
- Peck, Carroll Wilnot, IV, '13 (D). Salesman, National Aniline and Chemical Company, Inc., 21 Burling Slip, New York City.
- Pensel, George Robert, IV, '13 (B.T.D.). Chemist, Shuttlesworth Brothers Company, Amsterdam, N. Y.
- Perkins, John Edward, III, '00 (D). Superintendent, S. N. & C. Russell Manufacturing Company, Pittsfield, Mass.
- Perkins, Joshua Dean, III, '08 (D). Overseer, Amoskeag Manufacturing Company, Manchester, N. H.

- Perlman, Samuel, IV, '17 (B.T.C.).** Chemist, E. I. du Pont de Nemours & Co., Wilmington, Del.
- Petty, George Edward, I, '03 (C).** Textile Inspector, Quartermaster's Corps, United States Army, Greensboro, N. C.
- Pillsbury, Ray Charles, I, '13 (D).** Efficiency Engineer, Cneney Brothers, South Manchester, Conn.
- Plaisted, Webster, II, '18 (D).** Chief Machinist's Mate, United States Naval Hospital, Pelham Bay Park, N. Y.
- Plummer, Elliott Barton, IV, '13 (D).** Died Jan. 14, 1919.
- Potter, Carl Howard, I, '09 (D).** With Brighton Mills, Passaic, N. J.
- Pottinger, James Gilbert, II, '12 (D).** Sergeant, Quartermaster's Corps, A. E. F.; home address, 80 Stratford Street, West Roxbury, Mass.
- Pradel, Alois Joseph, III, '00 (D).** Designer, Montrose Worsted Company, Woonsocket, R. I.
- Pradel, Mrs. Alois J. (Walker, Anna G.), IIb, '03 (C).** 534 South Main Street, Woonsocket, R. I.
- Prescott, Walker Flanders, IV, '09 (D).** Chemical Sales Department, Sherwin-Williams Company, 897 Centre Street, Montreal, Can.
- Prince, Sylvanus Cushing, VI, '08 (D).**
- Proctor, Braman, IV, '08 (D).** Dyestuff Salesman, Kuttroff, Pickhardt & Co., Inc., 86 Federal Street, Boston, Mass.
- Putnam, George Ives, IV, '16 (B.T.D.).** Chief Textile Chemist and Dyestuff Purchasing Agent, Mohawk Valley Cap Factory, 203 Park Avenue, Utica, N. Y.; also Consulting Chemist for Diamond Chemical Company, Inc., and Utica Laboratories, Utica, N. Y.
- Putnam, Leverett Nelson, IV, '10 (D).** Overseer of Dyeing, Arlington Mills, Lawrence, Mass.
- Putnam, Philip Clayton, IV, '13 (D).** Dyer, Sayles Finishing Plants, Saylesville, R. I.
- Ramsdell, Theodore Ellis, I, '02 (D).** Agent, Monument Mills, Housatonic, Mass.
- Rasche, William August, III, '03 (D).** Deceased.
- Raymond, Charles Abel, IV, '07 (D).** Assistant Superintendent, New England Fuel and Transportation Company, Everett, Mass.
- Reed, Norman Bagnell, I, '10 (D).** Assistant to Agent, Lawrence Manufacturing Company, Lowell, Mass.
- Reynolds, Fred Bartlett, II, '08 (D).** Purchasing Agent, M. T. Stevens & Sons Company, North Andover, Mass.
- Reynolds, Isabel Halliday, III, '03 (C).** Clerk, Pacific Mills Print Works, Lawrence, Mass.
- Rich, Edward, IV, '15 (B.T.D.).** First-class Sergeant, 303d Engineers, Company C, A. E. F.; home address, 401 Manchester Street, Manchester, N. H.
- Rich, Everett Blaine, III, '11 (D).** Managing Director, C. H. Greenleaf Company, Hotel Vendome, Boston, Mass., and Manager, Profile House, White Mountains, N. H.
- Richardson, George Oliver, IV, '16 (B.T.D.).** Chemist, National Aniline and Chemical Company, Shanghai, China.
- Richardson, Richardson Perry, I, '13 (D).** With Stark Mills, Manchester, N. H.
- Riggs, Homer Chase, VI, '17 (B.T.E.).** Sergeant, Motor Transport Corps, 12th Administrative Company, A. E. F.; home address, South Essex, Mass.
- Ripley, George Keyes, II, '17 (D).** General Manager, Troy Blanket Mills, Troy, N. H.
- Roberson, Pat Howell, I, '05 (C).** Merchant, James R. Roberson & Sons, Cropwell, Ala.
- Roberts, Carrie Isabel, IIb, '05 (C).** Designing and Craft Work, 571 Westford Street, Lowell, Mass.
- Robinson, Ernest Warren, IV, '08 (D).** Superintendent, Belding Brothers & Co., Rockville, Conn.
- Robinson, William Carleton, III, '03 (C).** Inspector, H. F. Livermore & Co., 85 Pearl Street, Boston, Mass.
- Robson, Frederick William Charles, IV, '10 (D).**
- Roche, Raymond Vincent, IV, '12 (D).** Overseer, Renfrew Manufacturing Company, Adams, Mass.
- Rundlett, Arnold Dearborn, VI, '12 (D).** Assistant Superintendent, Albany Felt Company, Albany, N. Y.
- Sanborn, Ralph Lyford, VI, '16 (B.T.E.).** Development Engineer, Firestone Tire and Rubber Company, Akron, Ohio.
- Saunders, Harold Fairbairn, IV, '09 (D).** Chemist, Pacific Mills, Lawrence, Mass.

- Sawyer, Joseph Warren, IV, '15 (B.T.D.).** Assistant Chemist, Chemical Laboratory, Boston Navy Yard, Boston, Mass.; home address, 67 Abbott Street, Lawrence, Mass.
- Shaber, Hyman Jesse, VI, '17 (B.T.E.).** Signal Corps, Aero Division, 7th Aero Squadron, Christobal, Canal Zone, Panama; home address, 35 Factory Street, Nashua, N. H.
- Shea, Francis James, II, '12 (D).** Second Lieutenant, 74th Infantry, Camp Devens, Massachusetts.
- Sidebottom, Leon William, IV, '11 (D).** Colorist, Essex Aniline Works, Inc., South Middleton, Mass.
- Sjostrom, Carl Gustaf Verner, Jr., III, '17 (D).** Battery F, Field Artillery, 102d Regiment, A. E. F.; home address, 58 Church Street, Ware, Mass.
- Sleeper, Robert Reid, IV, '00 (D).** Instructor of Dyeing, Lowell Textile School, Lowell, Mass.
- Smith, Albert Adams, I, '99 (D).** Deceased.
- Smith, Doane White, II, '10 (D).** Officer's Training School, Pelham Bay Park, N. Y.; home address, 412 Belmont Avenue, Springfield, Mass.
- Smith, Ralston Fox, I, '04 (C).** Manager and Secretary, The Cleveland Battery and Electric Company, 1974 East 66th Street, Cleveland, Ohio.
- Smith, Stephen Eaton, I, '00 (D).** Head of Cotton Yarn Department, Lowell Textile School, Lowell, Mass.
- Smith, Theophilus Gilman, Jr., IV, '10 (D).** Farming, Groton, Mass.
- Snelling, Fred Newman, II, '03 (D).** With the American Express Company, Haverhill, Mass.
- Sokolsky, Henry, VI, '17 (B.T.E.).** 15 Sheldon Street, Lowell, Mass.
- Spiegel, Edward, II, '03 (C).** Theatrical Business, New York City.
- Standish, John Carver, IV, '11 (D).** Superintendent, F. C. Huyck & Sons, Albany, N. Y.
- Stevens, Dexter, I, '04 (D).** Manager, Esmond Mills, Esmond, R. I.
- Stevenson, Murray Reid, III, '03 (C).** Farming, Princeton Depot, Mass.
- Stewart, Arthur Andrew, II, '00 (D).** Head of Finishing Department, Lowell Textile School, Lowell, Mass.
- Stewart, Walter Lawrence, III, '03 (D).** Cotton Goods Converter, Charles Kohlman & Co., Inc., 40 Thomas Street, New York City.
- Stiegler, Harold Winfred, IV, '18 (B.T.C.).** Research Chemist, National Aniline and Chemical Company, Buffalo, N. Y.
- Stohn, Alexander Charles, III, '06 (C).** Mill Manager, C. Stohn, Hyde Park, Mass.
- Stone, Ira Aaron, IV, '09 (D).** President and General Manager, American Waste Company, Inc., 10 High Street, Boston, Mass.
- Storer, Francis Everett, II, '07 (D).** Cashier, Windham County National Bank, Danielson, Conn.
- Stronach, Irving Nichols, IV, '10 (D).** Dyer, Renfrew Manufacturing Company, Adams, Mass.
- Stursberg, Paul William, II, '07 (D).** Died in 1913.
- Sturtevant, Albert William, IV, '17 (D).** Ordnance Department, United States Army; home address, 32 Brookside Street, Lowell, Mass.
- Sullivan, John David, VI, '12 (D).** With Haverhill Box Board Company, Bradford, Mass.
- Sunbury, Herbert Ellsworth, VI, '18 (B.T.E.).** Corporal, Engineers' Corps, Camp Sheridan, Alabama; home address, Wamesit, Mass.
- Sutton, Leslie Emans, I, '17 (D).** Civilian Inspector, Ordnance Department, Boott Mills, Lowell, Mass.
- Swan, Guy Carleton, II, '06 (D).** Chemist, E. I. du Pont de Nemours & Co., Wilmington, Del.
- Swift, Edward Spooner, S.J., I, '02 (D).** Clergyman, Woodstock College, Woodstock, Md.
- Sylvain, Charles Emile, VI, '13 (D).** With International Machinery Company of 104 Pearl Street, New York City, at Rua Sao Bento, 30, Rio de Janeiro, Brazil.
- Syme, James Francis, II, '00 (D).** General Manager, D. Goff & Sons, Pawtucket, R. I.
- Thaxter, Joseph Blake, Jr., II, '12 (D).** Salesman, Smith & Dove Manufacturing Company, Andover, Mass.
- Thomas, Roland Vincent, I, '05 (C).**
- Thompson, Everett Leander, I, '05 (D).** Salesman, S. F. Bowser & Co., Inc., Bradford, Mass.
- Thompson, Henry James, IV, '00 (D).** Dyer, Boston Rubber Shoe Company, Factory No. 1, Malden, Mass.
- Tilton, Elliott Thorp, II, '99 (D).** Died January, 1917.

- Toovey, Sidney Ernest, II, '04 (C).** Assistant Manager, S. S. Learnard Company, 50 Faneuil Hall Market, Boston, Mass.
- Toshach, Reginald Alexander, II, '11 (D).** Lieutenant, Field Artillery; home address, 135 Lowell Avenue, Methuen, Mass.
- Tyler, Lauriston Whitcombe, II, '16 (D).** Private, Medical Corps, A. E. F.; home address, 16 Sheridan Street, Haverhill, Mass.
- Varnum, Arthur Clayton, II, '06 (D).** Superintendent, Hamilton Woolen Company, Southbridge, Mass.
- Walen, Ernest Dean, VI, '14 (B.T.E.).** With Textile Research Company, 34 Batterymarch Street, Boston, Mass.
- Walker, Alfred Schuyler, II, '11 (D).** Overseer, Essex Mills, Picton, N. J.
- Walker, Anna Gertrude, IIIb, '03 (C).** See Pradel, Mrs. Alois J.
- Warren, Philip Hamilton, II, '05 (D).** Superintendent, Hopeville Manufacturing Company, Worcester, Mass.
- Watson, William, III, '11 (D).** Real Estate Broker, Frank E. Watson, 25 Washington Square, Haverhill, Mass.
- Webb, Frank Herbert, IV, '04 (D).** Chemist, Washington Mills, Lawrence, Mass.
- Webber, Arthur Hammond, IV, '01 (D).** Chemist, Melville Color Company, 96 High Street, Boston, Mass.
- Weinz, William Elliot, IV, '08 (D).** With Essex Aniline Works, Inc., 39 Oliver Street, Boston, Mass.
- Wheelock, Stanley Herbert, II, '05 (D).** Superintendent and Assistant Treasurer, Stanley Woolen Company, Uxbridge, Mass.
- Whitcomb, Roscoe Myron, IV, '10 (D).** Pharmacist, R. M. Whitcomb & Co., Ashland, N. H.
- White, Royal Phillip, II, '04 (D).** Agent, Stirling Mills, Lowell, Mass.
- Whitehill, Warren Hall, IV, '12 (D).** War Gas Investigation, War College, Washington, D. C.
- Wightman, William Henry, IV, '06 (D).** Salesman, Aniline Dyes and Chemicals, Inc., Boston, Mass.
- Wilson, John Sigmund, II, '03 (D).** Deceased.
- Wilson, Walter Ernest Hudson, I, '04 (C).** Deceased.
- Wing, Charles True, III, '02 (D).** Inspector, Quartermaster's Corps, Plymouth, Mass.
- Wingate, William Henry, IV, '08 (D).** Printing Foreman, Sidney Blumenthal & Co., Shelton, Conn.
- Wise, Paul Tower, II, '01 (D).** Vice-President and General Manager, Chelsea Fiber Mills, 1155 Manhattan Avenue, Brooklyn, N. Y.
- Wood, Ernest Hadley, S.B., IV, '11 (D).** Instructor, Department of Biological Chemistry, Marquette School of Medicine, Milwaukee, Wis.
- Wood, Herbert Charles, I, '06 (D).** Assistant Superintendent, Union Wadding Company, Pawtucket, R. I.
- Wood, James Carleton, IV, '09 (D).** Chemist and Fabrie Expert, Brunswick, Balke, Colender Company, Muskegon, Mich.
- Wood, Lawrence Burnham, IV, '17 (B.T.C.).** Industrial Engineer, Sayles Finishing Plants, Phillipsdale, R. I.
- Woodcock, Eugene Close, II, '07 (D).** Manufacturing Superintendent, Chelsea Fiber Mills, 1155 Manhattan Avenue, Brooklyn, N. Y.
- Woodies, Ida Alberta, IIIb, '00 (C).** Reconstruction Aid, Medical Department, Military Hospital No. 3, Colonia, N. J.
- Woodman, Harry Lincoln, I, '02 (C).** Draftsman, Saco-Lowell Shops, Lowell, Mass.
- Woodruff, Charles Beauregard, I, '06 (C).** Buyer, Sharp & Co., Inc., Birmingham, Ala.
- Wright, Edward, II, '05 (C).** Captain, Sanitary Corps, Camp Benning, Columbus, Ga.
- Yavner, Harry, II, '12 (D).** Inspector, Quartermaster's Corps, Boston, Mass.; home address, 152 Linwood Street, Somerville, Mass.

GRADUATES ARRANGED BY CLASSES.

[For alphabetical list of alumni and addresses see page 89; deceased graduates are indicated by a star (*).]

1899.

- Bailey, Joseph W., I (D).
 *Burrage, Katherine C., IIIb (C).
 Cuttle, James H., II (D).
 Fels, August B., II (D).
 Harmon, Charles F., I (D).
 *Smith, Albert A., I (D).
 *Tilton, Elliott T., II (D).

1900.

- Baldwin, Arthur L., IV (D).
 Barr, I. Walwin, I (D).
 Bodwell, Henry A., II (D).
 Brickett, Chauncey J., II (D).
 *Burrage, Katherine C. (postgraduate),
 IIIb (C).
 *Campbell, Laura E., IIIb (C).
 Harrison, Mrs. Arthur, IIIb (C).
 Lakeman, Fannie S., IIIb (C).
 Lamson, George F., I (D).
 Leach, John P., I (C).
 Merchant, Edith C., IIIb (C).
 Parker, Harry C., III (C).
 Perkins, John E., III (D).
 Pradel, Alois J., III (D).
 Sleeper, Robert R., IV (D).
 Smith, Stephen E., I (D).
 Stewart, Arthur A., II (D).
 Syme, James F., II (D).
 Thompson, Henry J., IV (D).
 Woodies, Ida A., IIIb (C).

1901.

- Bradley, Richard H., V (C).
 Buchan, Donald C., II (D).
 Currier, John A., II (D).
 Ewer, Nathaniel T., IV (D).
 Foster, Clifford E., II (D).
 Harrison, Mrs. Arthur (postgraduate),
 IIIb (C).
 Kingsbury, Percy F., IV (D).
 Marinel, Walter N., I (D).
 Minge, Jackson C., I (C).
 Moorhouse, Wm. R., IV (D).
 Parker, B. Moore, I (D).
 Webber, Arthur H., IV (D).
 Wise, Paul T., II (D).
 Woodies, Ida A. (postgraduate), IIIb (C).

1902.

- Burnham, Frank E., IV (D).
 Carter, Robert A., IV (D).
 Craig, Clarence E., III (D).
 Curran, Charles E., III (C).
 Ferguson, Arthur F., I (C).
 Harris, George S., I (C).
 Haskell, Walter F., IV (D).
 Holgate, Benj., III (C).
 Ramsdell, Theodore E., I (D).
 Swift, Edward S., I (D).
 Wing, Charles T., III (D).
 Woodman, Harry L., I (C).

1903.

- Bennett, Edward H., II (C).
 Bloom, Wilfred N., IV (D).
 Campbell, Louise P., IIIb (C).
 Campbell, Orison S., II (D).
 Chamberlin, Frederick E., I (D).
 Emerson, Frank W., II (D).
 Evans, Alfred W., III (D).
 Evans, Wm. R., III (D).
 Ferguson, Arthur F., I (D).
 Fuller, George, I (D).
 Gerrish, Walter, III (D).
 Holgate, Benj., III (C).
 Hutton, Clarence, III (C).
 Morrison, Fred C., I (D).
 Najar, G. George, IV (D).
 Petty, George E., I (C).
 Pradel, Mrs. Alois J., IIIb (C).
 *Rasche, Wm. A., III (D).
 Reynolds, Isabel H., III (C).
 Robinson, Wm. C., III (C).
 Snelling, Fred N., II (D).
 Spiegel, Edward, II (C).
 Stewart, Walter L., III (D).
 Stevenson, Murray R., III (C).
 *Wilson, John S., II (D).

1904.

- Abbot, Edward M., II (D).
 Baldwin, Frederick A., II (D).
 Clapp, F. Austin, II (D).
 Clogston, Raymond B., IV (D).
 Culver, Ralph F., IV (D).
 Cutler, Benj. W., Jr., III (D).

Dewey, James F., II (D).
 Donald, Albert E., II (D).
 Halsell, Elam R., I (C).
 Horsfall, George G., II (C).
 Jones, Everett A., III (C).
 Jury, Alfred E., IV (D).
 Lucey, Edmund A., II (D).
 MacPherson, Wallace A., III (D).
 Meadows, Wm. R., I (D).
 O'Donnell, John D., I (C).
 O'Hara, Wm. F., IV (C).
 Parker, Everett N., I (C).
 Smith, Ralston F., I (C).
 Stevens, Dexter, I (D).
 Toovey, Sidney E., II (C).
 Webb, Frank H., IV (D).
 White, Royal P., II (D).
 *Wilson, Walter E. H., I (C).

1905.

Adams, Henry S., I (D).
 Arundale, Henry B., II (C).
 Boyd, George A., I (D).
 Carr, George E., I (D).
 Cole, James T., II (D).
 Conklin, Jennie G., IIb (C).
 Curtis, Wm. L., II (C).
 Dillon, James H., III (D).
 Harris, Charles E., I (D).
 Hollings, James L., I (D).
 Hook, Russell W., IV (D).
 Hunt, Chester L., III (C).
 Jones, Everett A., III (D).
 Lee, Wm. H., II (C).
 Lewis, Walter S., IV (D).
 McKenna, Hugh F., IV (D).
 Midwood, Arnold J., IV (D).
 Moore, Everett B., I (D).
 Parker, Everett N., I (D).
 Roberson, Pat H., I (C).
 Roberts, Carrie I., IIb (C).
 Thomas, Roland V., I (C).
 Thompson, Everett L., I (D).
 Warren, Philip H., II (D).
 Wheelock, Stanley H., II (D).
 Wright, Edward, Jr., II (C).

1906.

*Avery, Charles H., II (D).
 Bradford, Roy H., II (D).
 Church, Charles R., II (C).
 Churchill, Charles W., III (D).
 Cole, Edward E., IV (D).
 Currier, Herbert A., I (D).
 Curtis, Frank M., I (D).
 Fleming, Frank E., IV (D).
 Gahm, George L., II (D).
 Gillon, Sara A., IIb (C).
 Hennigan, Arthur J., II (D).
 Hildreth, Harold W., II (C).
 Hintze, Thomas F., I (C).
 Kent, Clarence L., III (C).

Lane, John W., I (C).
 McDonnell, Wm. H., I (C).
 Newcomb, Guy H., IV (C).
 Reynolds, Isabel H. (postgraduate), III (C).
 Stohn, Alexander C., III (C).
 Swan, Guy C., II (D).
 Varnum, Arthur C., II (D).
 Wightman, Wm. H., IV (D).
 Wood, Herbert C., I (D).
 Woodruff, Charles B., I (C).

1907.

Arundale, Henry B., II (D).
 Brannen, Leon V., III (C).
 Coman, James G., I (D).
 Craig, Albert W., IV (D).
 Ehrenfried, Jacob B., II (C).
 Farmer, Chester J., IV (D).
 Haskell, Spencer H., II (D).
 Hathorn, George W., IV (D).
 Hildreth, Harold W., II (D).
 Hoyt, Charles W. H., IV (D).
 Knowland, Daniel P., IV (D).
 Lane, John W., I (C).
 Mackay, Stewart, III (D).
 *Merriman, Earl C., II (D).
 Parker, Mrs. Herbert L., IIb (C).
 Raymond, Charles A., IV (D).
 Storer, Francis E., II (D).
 *Stursberg, Paul W., II (D).
 Woodcock, Eugene C., II (D).

1908.

Abbott, George R., II (D).
 *Ballard, Horace W. C. S., IV (D).
 Dwight, John F., Jr., II (D).
 Farr, Leonard S., II (D).
 Gay, Olin D., II (D).
 Hadley, Walter E., IV (D).
 Huising, Geronimo H., I (D).
 *Jenckes, Leland A., VI (D).
 Lewis, LeRoy C., IV (D).
 Mailey, Howard T., II (D).
 Perkins, J. Dean, III (D).
 Prince, Sylvanus C., VI (D).
 Proctor, Braman, IV (D).
 Reynolds, Fred B., II (D).
 Robinson, Ernest W., IV (D).
 Weinz, W. Elliot, IV (D).
 Wingate, Wm. H., IV (D).

1909.

Brainerd, Arthur T., IV (D).
 Conant, Harold W., I (D).
 Fairbanks, Almonte H., II (D).
 Ferguson, Wm. G., III (D).
 Fiske, Starr H., II (D).
 Gyzander, Arne K., IV (D).
 Holden, Francis C., IV (D).
 Kay, Harry P., II (D).
 Laughlin, James K., III (D).
 Levi, Alfred S., IV (D).

Mason, Archibald L., VI (D).
 Mullen, Arthur T., II (D).
 Newall, J. Douglas, IV (D).
 Parkis, Wm. L., I (D).
 Pease, Chester C., I (D).
 Potter, Carl H., I (D).
 Prescott, Walker F., IV (D).
 Saunders, Harold F., IV (D).
 Stone, Ira A., IV (D).
 Wood, J. Carleton, IV (D).

1910.

Arienti, Peter J., IV (D).
 Cary, Julian C., VI (D).
 Clark, Thomas T., II (D).
 Duval, Joseph E., II (D).
 Finlay, Harry E., IV (D).
 Fletcher, Roland H., VI (D).
 Gale, Harry L., III (D).
 Goldberg, George, VI (D).
 Hardy, Philip L., VI (D).
 Howe, Woodbury K., I (D).
 Hurtado, Leopoldo, Jr., VI (D).
 Jelleme, Wm. O., I (D).
 Keough, Wesley L., II (D).
 Lamb, Arthur F., II (D).
 McCool, Frank L., IV (D).
 Manning, Frederick D., IV (D).
 Murray, James A., II (D).
 Nichols, Raymond E., VI (D).
 Putnam, Leverett N., IV (D).
 Reed, Norman B., I (D).
 Robson, Frederick W. C., IV (D).
 Smith, Doane W., II (D).
 Smith, Theophilus G., Jr., IV (D).
 Stronach, Irving N., IV (D).
 Whitcomb, Roscoe M., IV (D).

1911.

Adams, Tracy A., IV (D).
 Bailey, Walter J., IV (D).
 Blaikie, Howard M., II (D).
 Cameron, Elliott F., IV (D).
 Chandler, Proctor R., IV (D).
 Chisholm, Lester B., I (D).
 Dewey, Maurice W., II (D).
 Flynn, Thomas P., IV (D).
 Ford, Edgar R., IV (D).
 Gainey, Francis W., IV (D).
 Hay, Ernest C., II (D).
 Hendrickson, Walter A., II (D).
 Hubbard, Ralph K., IV (D).
 Hunton, John H., II (D).
 Martin, Harry W., IV (D).
 Merrill, Allan B., IV (D).
 Moore, Karl R., IV (D).
 O'Connell, Clarence E., IV (D).
 Pearson, Alfred H., IV (D).
 Rich, Everett B., III (D).
 Sidebottom, Leon W., IV (D).
 Standish, John C., IV (D).
 Toshach, Reginald A., II (D).

Walker, Alfred S., II (D).
 Watson, Wm., III (D).
 Wood, Ernest H., IV (D).

1912.

*Bigelow, Prescott F., II (D).
 Brown, Rollins G., IV (D).
 Coan, Charles B., IV (D).
 Conant, Richard G., I (D).
 Dalton, Gregory S., IV (D).
 Dearth, Elmer E., IV (D).
 Elliot, Gordon B., II (D).
 Engstrom, Karl E., VI (D).
 Frost, Harold B., II (D).
 Hassett, Paul J., IV (D).
 Holmes, Otis M., VI (D).
 Hood, Leslie N., IV (D).
 Lamont, Robert L., II (D).
 Leitch, Harold W., IV (D).
 Munroe, Sydney P., I (D).
 Niven, Robert S., VI (D).
 Pottinger, James G., II (D).
 Roche, Raymond V., IV (D).
 Rundlett, Arnold D., VI (D).
 Shea, Francis J., II (D).
 Sullivan, John D., VI (D).
 Thaxter, Joseph B., Jr., II (D).
 Whitehill, Warren H., IV (D).
 Yavner, Harry, II (D).

1913.

Bennett, Herbert B., II (D).
 Cleary, Charles J., II (D).
 Cook, Kenneth B., I (D).
 Davieau, Arthur N., VI (D).
 Davis, Alexander D., VI (D).
 Dearborn, Roy, VI (D).
 Gadsby, Arthur N., II (D).
 Holmes, Otis M., VI (B.T.E.).
 Horton, Chester T., VI (D).
 Johnson, Arthur K., S.B., IV (D).
 Mather, Harold T., VI (D).
 Murray, James, IV (D).
 Peck, Carroll W., IV (D).
 Pensel, George R., IV (B.T.D.).
 Pillsbury, Ray C., I (D).
 *Plummer, Elliott B., IV (D).
 Putnam, Philip C., IV (D).
 Richardson, Richardson P., I (D).
 Sylvain, Charles E., VI (D).
 Walen, Ernest D., VI (D).

1914.

Blake, Parker G., VI (D).
 Bradley, Raymond F., VI (D).
 Brickett, Raymond C., II (D).
 Creese, Guy T., IV (D).
 Davis, Alexander D., VI (B.T.E.).
 Dorr, Clinton L., VI (D).
 Fisher, Russell T., VI (D).
 Horton, Chester T., VI (B.T.E.).
 Leitch, Harold W., IV (B.T.D.).

Lillis, Marvin H., IV (D).
 McGowan, Frank R., VI (D).
 Walen, Ernest D., VI (B.T.E.).

1915.

Cosendai, Edwin F. E., IV (B.T.D.).
 Harrington, Thomas, IV (D).
 Lane, Oliver F., IV (B.T.D.).
 McGowan, Frank R., VI (B.T.E.).
 Neyman, Julius E., IV (B.T.D.).
 O'Brien, Philip F., II (D).
 Rich, Edward, IV (B.T.D.).
 Sawyer, Joseph W., IV (B.T.D.).

1916.

Adams, Floyd W., VI (B.T.E.).
 Baker, Wm. J., IV (D).
 Colby, J. Tracy, VI (D).
 Cummings, Edward S., VI (D).
 Davieau, Alfred E., VI (D).
 Echmalian, John G., VI (B.T.E.).
 Farnsworth, Harold V., VI (B.T.E.).
 Forsaith, Ralph A., VI (B.T.E.).
 Gerrish, Henry K., III (D).
 Lamprey, Leslie B., IV (B.T.D.).
 Molloy, Francis H., II (D).
 Morrill, Howard A., VI (D).
 Peabody, Roger M., II (D).
 Putnam, George I., IV (B.T.D.).
 Richardson, George O., IV (B.T.D.).
 Sanborn, Ralph L., VI (B.T.E.).
 Shaber, Hyman J., VI (D).
 Tyler, Lauriston W., II (D).

1917.

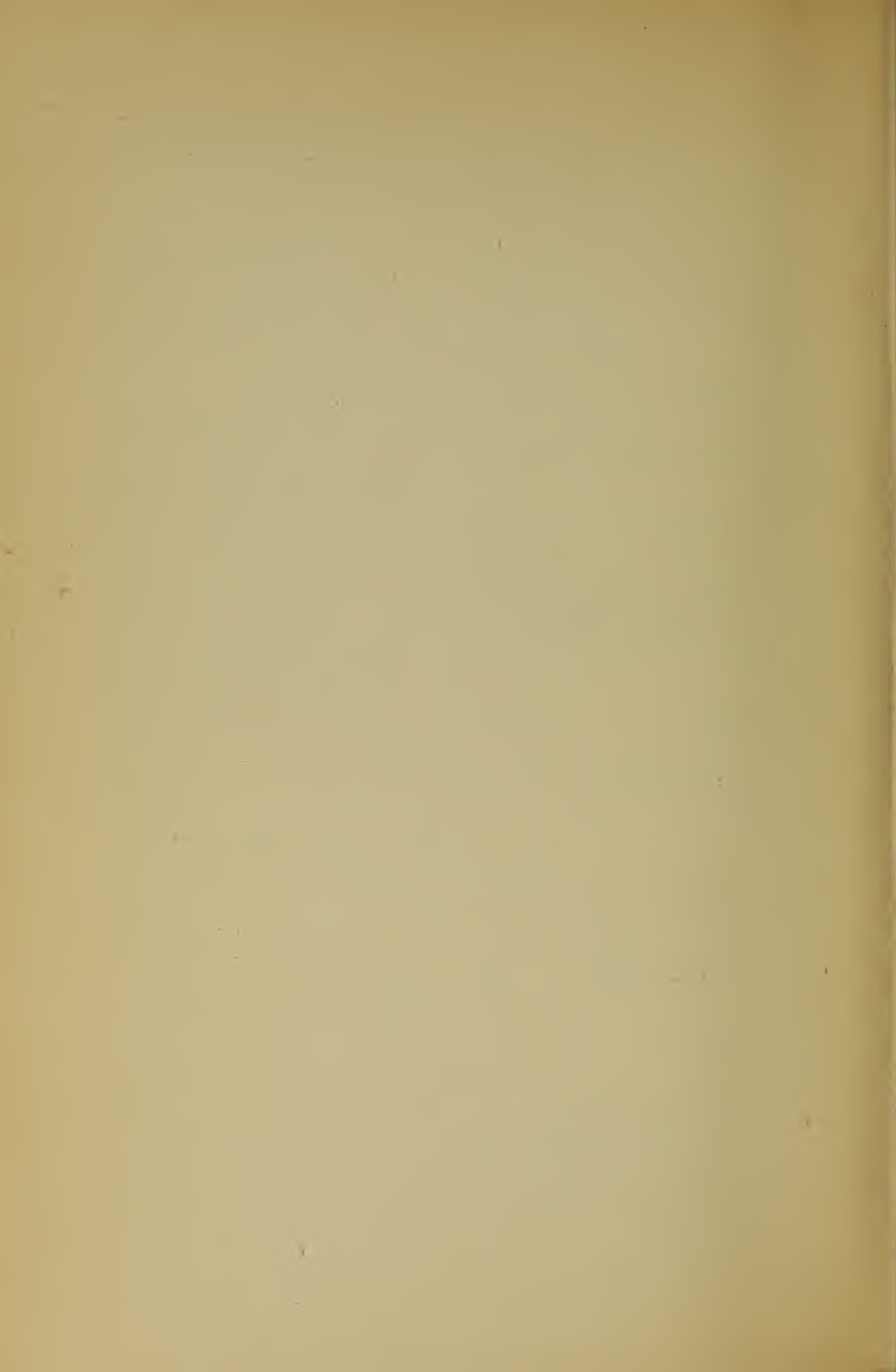
Albrecht, Charles H., IV (B.T.C.).
 Barlofsky, Archie, VI (B.T.E.).
 Berry, Wilbur F., II (D).
 Foster, Boutwell H., VI (B.T.E.).
 Fuller, Allen R., IV (B.T.C.).
 Howarth, Charles L., IV (B.T.C.).
 Irvine, James A., VI (B.T.E.).
 Matthews, Elmer C., II (D).
 O'Connor, Lawrence D., VI (D).
 Perlman, Samuel, IV (B.T.C.).
 Riggs, Homer C., VI (B.T.E.).
 Ripley, George K., II (D).
 Shaber, Hyman J., VI (B.T.E.).
 Sjostrom, Carl G. V., Jr., III (D).
 Sokolsky, Henry, VI (B.T.E.).
 Sturtevant, Albert W., IV (D).
 Sutton, Leslie E., I (D).
 Wood, Lawrence B., IV (B.T.C.).

1918.

Clark, Earl W., IV (B.T.C.).
 de Sa, Francisco, VI (B.T.E.).
 Fitzgerald, John F., IV (B.T.C.).
 Mauersberger, Herbert R. C., III (D).
 Palais, Samuel, IV (B.T.C.).
 Plaisted, Webster, II (D).
 Stiegler, Harold W., IV (B.T.C.).
 Sunbury, Herbert E., VI (B.T.E.).

INDEX.

	PAGE
Administration,	6, 82
Advanced standing,	32
Alumni Association,	81
Application blanks,	32, 105
Athletics,	26
Attendance,	35
Attendance card,	32
Awards of merit,	35
Board, cost of,	36
Buildings,	10
Bulletins and catalogue,	37
Calendar,	2, 3
Conduct,	36
Courses of instruction,	39
Courses for women,	40
Degree courses,	27, 35
Departments,	12, 54
Diploma courses,	28, 35
Entrance examinations,	28
Entrance requirements for day students,	27
Equipment,	12
Examinations,	33
Fees,	33
General committees,	5
General information,	32
Graduate course,	34
Graduates, day class, 1918,	84
Graduates, alphabetical register,	89
Graduates, class register,	99
Instructors,	6, 82
Introduction,	9
Library,	36
Lockers,	37
Medal, National Association of Cotton Manufacturers,	35
Object of the school,	9
Officers of administration and instruction,	6, 82
Partial courses,	34
Prizes for chemistry and dyeing,	35
Records and reports of standing,	34
Register of day students,	85
Registration,	32
Residence and expenses,	36
Rooms, cost of,	36
Sessions,	36
Subjects of instruction:—	
Textile Engineering Department,	54
Chemistry and Dyeing Department,	61
Textile Design and Power Weaving Department,	69
Language and History Department,	72
Cotton Yarn Department,	74
Woolen and Worsted Yarn Department,	76
Finishing Department,	77
Physical culture,	80
Thesis,	34
Trustees,	4
Tuition,	33



DAY APPLICATION BLANK

THIS SHOULD BE FILLED OUT AND SENT TO THE PRESIDENT

LOWELL TEXTILE SCHOOL

LOWELL, MASS.

Date,-----

Name in Full,-----

Date and Place of Birth,-----

Home Address, {-----
City or Town. State.

Street and Number.

Parent or Guardian,-----

School last attended,-----

DEGREE COURSES. (Course should be indicated.)

VI. Textile Engineering.

IV. Chemistry and Textile Coloring.

1. General Course.

2. Cotton Option.

3. Wool Option.

DIPLOMA COURSES. (Course should be indicated.)

I. Cotton Manufacturing.

III. Textile Design.

II. Wool Manufacturing.

(General Textile Course.)

Signature,-----

ENDORSEMENT BY OFFICER OF SCHOOL LAST ATTENDED

I hereby certify that-----
the above applicant has completed the regular course at the-----
High School, and has satisfactorily passed the following subjects, as specified
on pages 28-32 of Catalogue of 1919-1920, making a total of-----points.

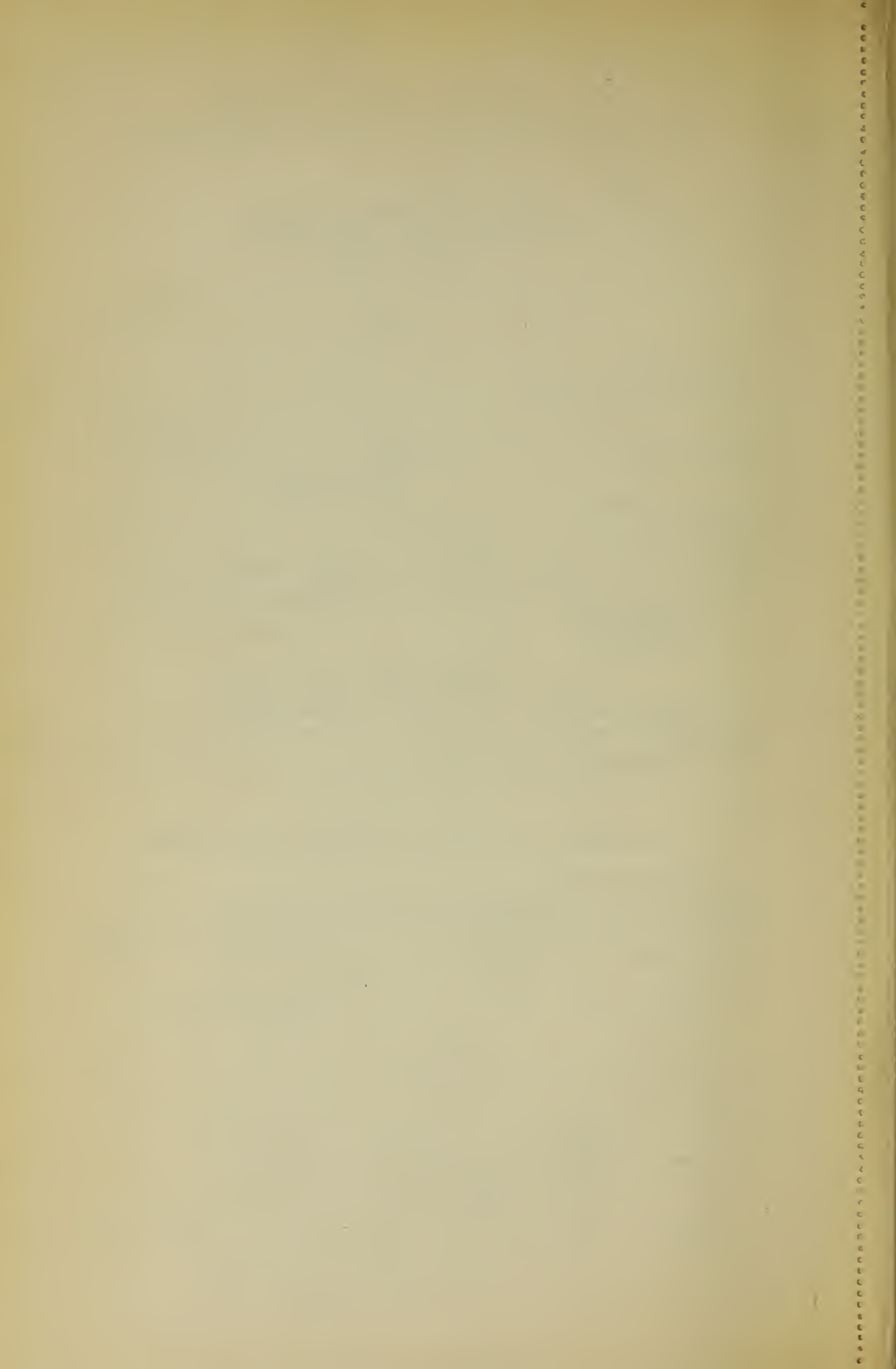
REQUIRED SUBJECTS. POINTS.

ELECTIVE SUBJECTS. POINTS.

Signed:-----

Principal,-----School, located
at-----State of-----

Date,-----



BULLETIN

OF THE

Lowell Textile School

LOWELL, MASS.

Issued Quarterly

1919-1920

Entered August 26, 1902, at Lowell, Mass., as second-class matter,
under Act of Congress of July 16, 1894

Moody Street and Colonial Avenue

BOSTON

WRIGHT & POTTER PRINTING CO., STATE PRINTERS

32 DERNE STREET

1919

PUBLICATION OF THIS DOCUMENT
APPROVED BY THE
SUPERVISOR OF ADMINISTRATION.

TRUSTEES OF THE LOWELL TEXTILE SCHOOL.

Officers.

—— ———, *Chairman.*

ARTHUR G. POLLARD, *Vice-Chairman.* CHARLES H. EAMES, *Clerk.*

Trustees.

On the Part of the Commonwealth of Massachusetts.

Dr. PAYSON SMITH, Commissioner of Education.

On the Part of the City of Lowell.

Hon. PERRY D. THOMPSON, Mayor of Lowell.

FOR TERM ENDING JUNE 30, 1920.

GEORGE H. SAYWARD, Winchester, Treasurer, Pemberton Company, Boston corporation, mills at Lawrence.

FREDERICK A. FLATHER, Lowell, Treasurer, Boott Mills, Boston corporation, mills at Lowell.

WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Franklin, Uxbridge.

HENRY A. BODWELL, Andover, Treasurer, Smith & Dove Manufacturing Company, class of 1900.

EDWARD H. ABBOT, Graniteville, Vice-President and Agent, Abbot Worsted Company, class of 1904.

FOR TERM ENDING JUNE 30, 1921.

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ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.

GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer.

ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.

HERBERT WATERHOUSE, North Chelmsford.

FOR TERM ENDING JUNE 30, 1922.

WILLIAM R. MOORHOUSE, Boston, Chemist, National Aniline and Chemical Company, class of 1901.

HUGH J. MOLLOY, Lowell, Superintendent of Public Schools.

WILLIAM A. MITCHELL, Lowell, Agent, Massachusetts Cotton Mills, Boston corporation, mills at Lowell.

T. ELLIS RAMSDELL, Housatonic, Agent, Monument Mills, class of 1902.

THOMAS T. CLARE, North Billerica, Assistant Manager and Treasurer, Talbot Mills, class of 1910.

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President.

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In charge of Department of Woolen and Worsted Yarns.

ARTHUR ANDREW STEWART, 53 Mount Hope Street.

In charge of Department of Finishing.

STEPHEN EATON SMITH, 409 Lowell Street, Methuen.

In charge of Department of Cotton Yarns and Knitting.

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In charge of Department of Textile Design and Power Weaving.

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Secretary of the Faculty; in charge of Department of Languages, History and Economics.

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In charge of Department of Textile Engineering.

Instructor in Dyeing.

ULYSSES JOHN LUPIEN, S.B., Chelmsford.

Instructor in Mathematics, Physics and Electrical Engineering.

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Instructor in Machine-shop Practice.

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CORNELIUS LEONARD GLEN, 543 Fletcher Street.

Instructor in Finishing.

MARTIN JOHN HOELLRICH, 30 Saxonia Avenue, Lawrence.

Instructor in Weaving.

ARTHUR KIMBAL JOHNSON, S.B., 86 Stevens Street.

Instructor in Chemistry.

GUY EUGENE BRANCH, 85 Berkeley Street, Lawrence.

Instructor in Woolen and Worsted Yarns.

EDWARD KNEVALS HULL, 15 Queensbury Street, Boston.

Instructor in Mechanical Drawing.

ELMER EDWARD FICKETT, B.S., Standish Street.

Instructor in Quantitative Analysis.

Instructor in Mechanical Engineering.

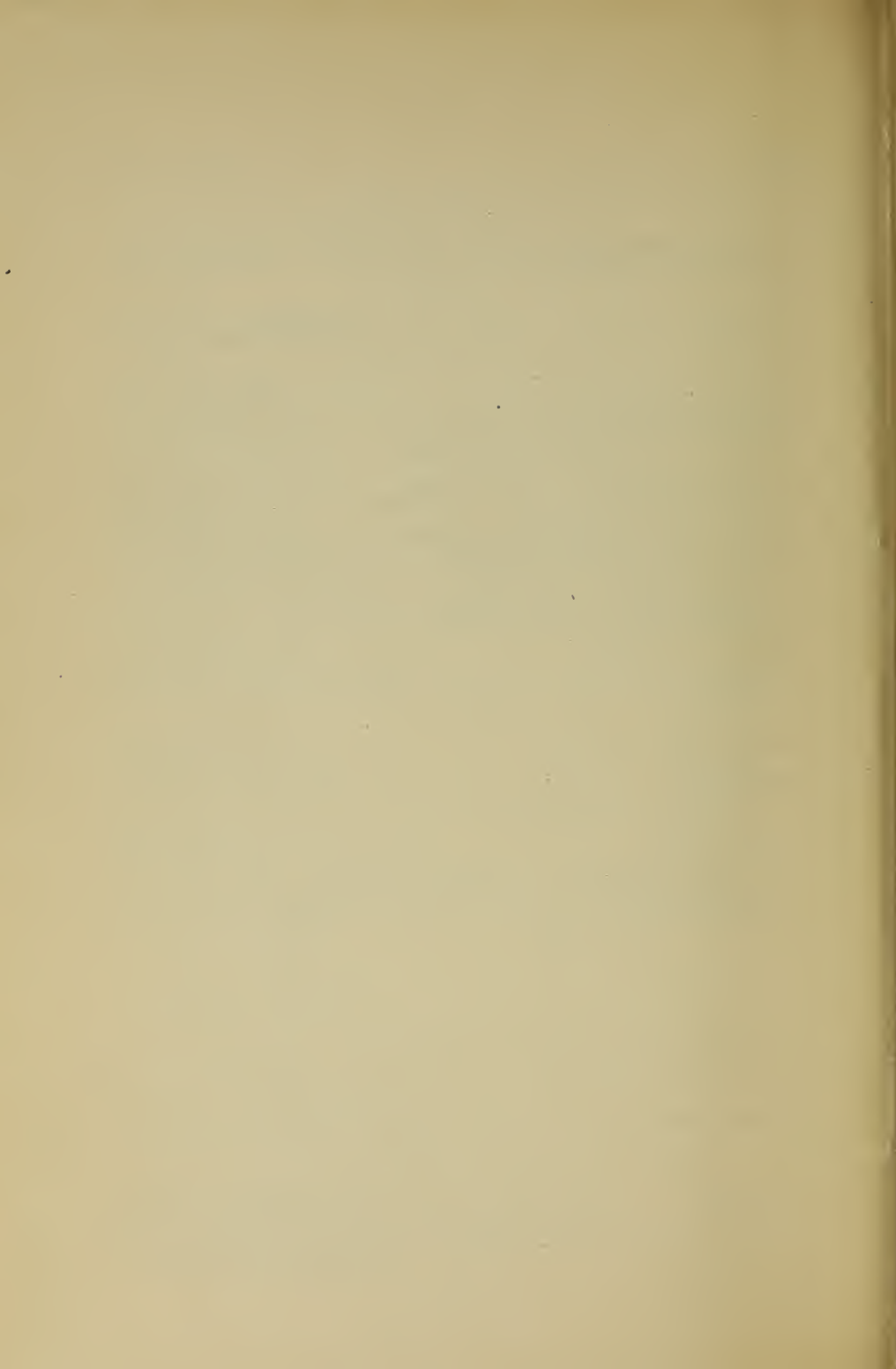
LEWIS PAUL CHAPIN, Ph.D., B.S., Billerica.

Instructor in General Chemistry and Qualitative Analysis.

FREDERICK STEERE BEATTIE, Ph.B., 143 Grove Street.

Instructor in Organic Chemistry.

HARTMAN FRANK SCHMIDT,	1 Rhodora Street.
Instructor in Textile Design and Cloth Analysis.	
<hr/>	
Instructor in Mathematics, Mechanics and Drawing.	
GILBERT ROSCOE MERRILL,	96 Dingwell Street.
Assistant Instructor in Cotton Yarn Department.	
JAMES GUTHRIE DOW, A.B.,	149 B Street.
Assistant Instructor in Languages, History and Economics.	
JOHN NEWTON HOWKER,	89 Centre Street, Methuen.
Evening Instructor in Wool Sorting and Scouring.	
HOWARD DEXTER SMITH, Ph.D.,	669 Westford Street.
Evening Instructor in General-Chemistry.	
EMMA ELIZABETH WHITNEY,	39 Dover Street.
Evening Instructor in Freehand Drawing.	
EDITH CLARA MERCHANT,	268 Westford Street.
Evening Instructor in Freehand Drawing.	
HAMAZASB DER MANUELIAN, S.B.,	355 High Street.
Evening Instructor in Mechanical Drawing.	
CLIFTON LITTLEWOOD RICE, A.B., M.C.E.,	29 Woodward Avenue.
Evening Instructor in Mathematics.	
CHARLES PEIRCE,	85 Butman Road.
Evening Instructor in Power Weaving.	
WALTER BALLARD HOLT,	18 Mount Vernon Street.
Bursar.	
FLORENCE MOORE LANCEY,	46 Victoria Street.
Librarian.	
AGNES LOUISE TAISEY, B.S.,	499 Wilder Street.
Registrar.	
HELEN GRAYCE FLACK, B.S.,	445 Stevens Street.
Secretary.	
AI EDWIN WELLS,	178 Perry Street.
Student Assistant in Textile Engineering Department.	
MERRILL GEORGE MORRIS,	644 Varnum Avenue.
Student Assistant in Chemistry and Dyeing Department.	



THE LOWELL TEXTILE SCHOOL.

EVENING CLASSES.

GENERAL INFORMATION.

The courses of the evening school are varied and arranged to meet the special needs of those engaged in the industry. They vary in length from one to four years, and at the completion of each course the certificate of the school is awarded, provided, however, that the student has been in attendance in the course during the year for which the certificate is granted.

Sessions.

The evening classes commence the first Monday of October and continue for twenty weeks. The school is open on four evenings each week during the period mentioned, except when the school is closed for holiday recesses.

Report of Standing.

A report of standing covering the year's work is sent to all students who attend the entire year and take the necessary examinations.

Entrance Requirements.

All applicants to the evening classes must understand the English language and simple arithmetic. Those who are graduates of a grammar or high school are admitted upon certificate. Those who cannot present such a certificate are required to take examination in the subjects of English and arithmetic. In the examination in English a short composition must be written on a given theme, and a certain amount must be written from dictation. In the examination in arithmetic the applicant must show suitable proficiency in addition, subtraction, multiplication, division, common and decimal fractions, percentage, ratio and proportion. Opportunity to register or to take these examinations is offered each year, generally on the Thursday evenings of the two weeks previous to the opening of the evening school.

Registration.

Before entering the class a student must fill out an attendance card, which can be obtained at the office or from the instructors in the various departments.

Any student who has filed an attendance card and who wishes to change his course must notify the office before making the change.

Fees and Deposits.

All evening courses are free to residents of Lowell. To those outside of Lowell the fee is \$10 per year for *each course of two nights per week*. Students taking two courses or attending courses requiring more than two nights per week are required to pay \$15 per year for three nights and \$20 for four nights.

All fees and deposits must be paid in advance.

All students, whether from Lowell or not, taking Course (a), Chemistry and Dyeing Department, are required to make a deposit of \$5 at the commencement of the course. A deposit of \$10 will be required of all students taking Course (b), (c) or (d). This is to cover the cost of laboratory breakages, chemicals, apparatus, etc., and at the end of the year any unexpended balance is returned, or an extra charge made for the excess breakage.

Every student who takes the chemistry and dyeing course must check up his desk with the instructor of that department when he leaves the school. Any student not doing so will be charged 50 cents.

Supplies.

Students must provide their own books, stationery, tools, etc., and pay for any breakage or damage that they cause.

Student's supplies will be sold from the storeroom every evening school night from 6.45 to 7.15 P.M.

Schedule of Evening Classes, 1919-20.

	Monday.	Tuesday.	Thursday.	Friday.
Cotton yarns:				
First year,	8-9	-	7-8	-
Second year,	7-8	8-9	-	-
Third year,	7-8	8-9	-	-
Knitting,	7-8	-	-	-
Wool yarns:				
First year,	8-9	-	7-8	-
Second year,	7-8	8-9	-	-
Third year,	7-8	8-9	-	-
Design:				
First year,	7-8	-	8-9	-
Second year,	8-9	7-8	-	-
Third year,	-	-	7-9	-
Freehand drawing:				
First year,	7-9	-	7-9	-
Second year,	-	7-9	-	7-9
Third year,	-	7-9	-	7-9
Elementary chemistry:				
First year,	-	7-8	7-9	-
Second year,	7-9	-	7-8	7-9
Textile chemistry and dyeing:				
First year,	7-9	7-9	7-9	-
Second year,	7-9	7-9	7-9	-
Third year,	7-9	7-9	7-9	-
Analytical chemistry:				
First year,	7-9	7-9	7-9	-
Second year,	7-9	7-9	7-9	-
Third year,	7-9	7-9	7-9	-
Cotton weaving:				
First year,	-	7-9	-	-
Second year,	-	-	7-9	-
Woolen and worsted weaving:				
First year,	-	7-9	-	-
Second year,	-	-	7-9	-
Shop mathematics,	7-8	-	-	7-8

Schedule of Evening Classes, 1919-20 — Concluded.

	Monday.	Tuesday.	Thursday.	Friday.
Mathematics:				
First year,	8-9	-	-	8-9
Second year,	7-8	-	-	7-8
Mechanism,	7-8	-	-	7-8
Strength of materials,	8-9	-	-	8-9
Steam,	8-9	-	8-9	-
Electricity,	7-8	-	7-8	-
Machine drawing:				
First year,	-	7-9	7-9	-
Second year,	7-9	-	-	7-9
Third year,	7-9	-	-	7-9
Machine shop:				
First year,	7-9	7-9	-	-
Second year,	-	-	7-9	7-9
Cotton finishing,	-	8-9	-	8-9
Woolen and worsted finishing,	8-9	-	8-9	-

GENERAL EVENING COURSES.

The Lowell Textile School now offers to students several general courses. For each course a definite schedule is arranged which requires attendance of from six to eight hours per week.

The object of these courses is to give young men of ambition an opportunity to obtain instruction in all the branches of science that are allied with their daily work. For example, one who is employed as a weaver in a textile mill may, by means of the courses in manufacturing, obtain knowledge of the manufacture of yarn, the production of a design, and the methods of finishing a fabric, as well as the manner of its weaving or knitting. In like manner the dyer may augment his knowledge of the chemicals and materials he is daily handling. The engineer and machinist may acquire a knowledge of the mathematics, science of mechanics, electricity and drawing that underlie all the work of an engineer.

It is recognized that the interests of such students lie in a particular field of industry, and these courses are designed to bear directly upon the special line, and supplement, as far as possible, the practical work in which the student is engaged during the day.

The student selects his course upon entrance, and continues a regular schedule of subjects for three, four or five years, as may be necessary for its completion.

In a word, any man having a common school education and the ambition to advance in his line may now secure a broad and comprehensive training in the subjects which will be of vital importance to him in obtaining the goal of his ideal.

These general courses are supplemented by partial courses in all the subjects given, so that a student who finds it impracticable to carry on all the subjects in a complete course may select and take such subjects as will be of most value to him in his work.

A student taking one of these courses would attend school during the periods in which the subjects which he selected were being given.

A description of all courses follows.

I. Cotton Manufacturing — 4 Years.

This course includes a study of cottons and the manufacture of cotton yarns from the raw material to the finished yarn, and also a study of plain and fancy weaving. In close connection with the work in weaving is a

course in designing which covers the entire field of cotton fabrics. During the latter part of the course a study of cotton finishing and knitting is made.

For detailed description of subjects see page 19.

Schedule of Studies.

First Year.

	Monday.	Tuesday.	Thursday.	Friday.
7-8 P.M.	Design.	Weaving.	Cotton yarns.	-
8-9 P.M.	Cotton yarns.	Weaving.	Design.	-

Second Year.

7-8 P.M.	Cotton yarns.	Design.	Weaving.	-
8-9 P.M.	Design.	Cotton yarns.	Weaving.	-

Third Year.

7-8 P.M.	Cotton yarns.	Cotton yarns.	Design.	-
8-9 P.M.	-	Cotton finishing.	Design.	Cotton finishing.

Fourth Year.

7-8 P.M.	Knitting.	Design.	Cotton yarns.	-
8-9 P.M.	Cotton finishing.	Cotton yarns.	Design.	-

1a. Cotton Yarns — 3 Years.

This course is intended for those who desire to study the art of cotton yarn manufacture, and includes a study of the commercial varieties of cotton followed by a detailed study of each of the operations used in the manufacture of a cotton yarn.

Instruction is given by means of lecture and demonstration on the machines, and includes the solution of many problems of draft, twist and production.

Demonstration in the laboratory consists of instruction in machine adjustment and a study of the results of different settings, timings, speeds, etc.

For detailed description of this subject see page 19.

II. Wool Manufacturing — 4 Years.

This course is arranged to give those engaged in the manufacture of woolens and worsteds instruction in the various branches of the work. It includes a study of wools and allied fibers and the manner of manipulating from fibers to finished fabric, including all the processes of yarn manufacturing, weaving and knitting, designing and finishing.

For detailed description of subjects see page 19.

Schedule of Studies.

First Year.

	Monday.	Tuesday.	Thursday.	Friday.
7-8 P.M.	Design.	Weaving.	Woolen and worsted yarns.	-
8-9 P.M.	Woolen and worsted yarns.	Weaving.	Design.	-

Second Year.

7-8 P.M.	Woolen and worsted yarns.	Design.	Weaving.	-
8-9 P.M.	Design.	Woolen and worsted yarns.	Weaving.	-

Third Year.

7-8 P.M.	Woolen and worsted yarns.	Design.	Design.	-
8-9 P.M.	Woolen and worsted finishing.	Woolen and worsted yarns.	Woolen and worsted finishing.	-

Fourth Year.

7-8 P.M.	Knitting.	Design.	Woolen and worsted yarns.	-
8-9 P.M.	Woolen and worsted finishing.	Woolen and worsted yarns.	Design.	-

IIa. Woolen Yarns — 2 Years.

IIb. Worsted Yarns — 3 Years.

In both courses the students of the first year pursue the same class work, covering instruction in the many kinds of wool, the varying properties of the fibers, trade terms, sorting, scouring, carbonizing, etc. This work is followed by instruction in carding and mule spinning for the woolen students. For those desiring to study worsted yarn manufacture work

is taken up on the worsted card, followed by gilling and combing and processes of top making. The last year of this course is devoted to a study of worsted yarn manufacture on both the English and French systems.

Thus in three years' time one may acquire a thorough course of instruction in worsted yarn manufacturing, or, in two years, a knowledge of woolen yarn manufacture. He is thus able to obtain a knowledge of machines and processes that could not be obtained in the ordinary course of events in the mill.

For detailed description of subjects see page 19.

IIIa. Textile Design — 3 Years.

For one who is working in the design, pattern or weave room, the course in design offers instruction in the great variety of weaves, in cloth construction and analysis. It is practically impossible, under ordinary circumstances, for one to acquire in the mill a knowledge of the construction of the many textile fabrics. Where a person spends the greater portion of his life in one or two mills, his knowledge of fabrics is confined to those made in the mills in which he works. A course in designing supplements the experience received during the day, thus broadening a person's textile knowledge as well as making him better acquainted with the fabrics upon which he works daily.

For detailed description of subjects see page 19.

IIIb. Freehand Drawing — 3 Years.

In the course in freehand drawing, instruction is given in the drawing from models, casts and designs. Work is taken up in charcoal and also in colors. This course has appealed to many young women of the city, and it is believed that this is a most fortunate opportunity for both young women and young men of Lowell to acquire the elements of artistic designing.

IVa. Elementary Chemistry — 2 Years.

General Chemistry, including Inorganic and Organic.
Qualitative Analysis.

IVb. Textile Chemistry and Dyeing — 3 Years.

Lectures in Textile Chemistry and Dyeing.
Laboratory Work in Dyeing.

IVc. Analytical Chemistry — 3 Years.

Laboratory Work and Lectures in Qualitative Analysis.

IVd. Textile and Analytical Chemistry — 4 Years.

Lectures in Textile Chemistry and Dyeing.

Laboratory Work in Analytical Chemistry.

Hardly any branch of applied science plays so important a part in our industrial world as chemistry. Many large mills employ the chemist as well as the dyer, and with the great progress which is being made in the manufacture and application of dyestuffs, a basic knowledge of chemistry becomes an absolute necessity to the dyer. Within a comparatively short distance from Lowell are establishments employing men who require some knowledge of chemistry but who may not necessarily use dyes. Some find a knowledge of analytical chemistry helpful in their everyday work.

To meet these varying needs of our industrial community, the school offers a two-year course in general chemistry, organic and inorganic, which may be followed by any one of three courses, viz., textile chemistry and dyeing, analytical chemistry, and textile and analytical chemistry. In order to take Courses IVb, IVc or IVd, candidates must have a certificate from Course IVa, or show by examination or approved credentials that they have taken the equivalent of the work covered by this course.

For detailed description of these subjects see page 19.

Va. Cotton Weaving — 1 Year.**Vb. Woolen and Worsted Weaving — 1 Year.****Vc. Dobby and Jacquard Weaving — 1 Year.**

These are called weaving courses, but in reality they might more properly be called courses in loom fixing, for particular attention is given to the mechanism of the looms, the timing of the various parts, and the adjustments possible to produce desired results. Here, again, is an opportunity for students to fix, dismantle, erect and adjust looms in a way that could not be tolerated in any mill. Frequently students come to the classes with the knowledge that certain adjustments must be made upon a loom if certain results are to be obtained, but the reason for these is not known. The school offers the machine, time and instructor in order that the weaver or loomfixer may determine for himself the reason for some rule which he practices in his daily work. Not only can he become more familiar with the loom upon which he works every day, but he can study the operations of many other makes of looms.

For detailed description of subjects see page 19.

Via. Engineering Course — 3 Years.

This course has been arranged with the object of offering to those engaged in the mechanical and electrical departments of our mills opportunities to learn something concerning the theory underlying the many practical methods which they pursue during the day.

The course in the first year is laid out to include the fundamental subjects upon which all engineering rests, — mathematics, mechanics and mechanism of machines, and mechanical drawing. This elementary work is then strengthened by an additional year of mathematics and by two more years of drawing. Strength of materials is included in the second year, while the major portion of the third year's work is devoted to a consideration of the elements of steam and electrical engineering.

For detailed description of the subjects see page 19.

*Schedule of Studies.**First Year.*

	Monday.	Tuesday.	Thursday.	Friday.
7-8 P.M.	Mechanism.	Mechanical drawing.	-	Mechanism.
8-9 P.M.	Mathematics.	Mechanical drawing.	-	Mathematics.

Second Year.

7-8 P.M.	Mathematics.	-	Machine drawing.	Mathematics.
8-9 P.M.	Strength of materials.	-	Machine drawing.	Strength of materials.

Third Year.

7-8 P.M.	Electricity.	-	Electricity.	Machine drawing.
8-9 P.M.	Steam.	-	Steam.	Machine drawing.

Vib. Mechanical Drawing — 3 Years.

For one having occasion to make a sketch or detail drawing for the purposes of illustration or instruction, or for one who is daily required to work from a drawing or blue print, the course in mechanical drawing is offered. It first lays a foundation of the principles of mechanical drawing, and follows this with two years' work in drawing directly from parts of machines, preparing both the detail and the assembly drawing.

For detailed description of subject see page 19.

VId. Machine Shop — 3 Years.

The first year of this course is spent upon subjects which will prepare the student to more readily assimilate and appreciate the real work in the shop itself. Hence a large part of the first year's work is devoted to the mechanics and mechanism of machines, so that the student will be familiar with the principles used in transmitting force and motion in the machine tools upon which he spends most of his time during his second and third years. Since the ability to read and interpret a drawing is an elementary requirement of every machinist, it is required that a portion of each of the three years be devoted to that subject.

Thus it becomes possible for one who may be working at the bench during the day to learn how to operate a lathe or other tool, or for a lathe hand to acquire a knowledge of a planer, shaper, milling machine, grinder, etc. A man who has a knowledge of the special machine which he operates may by means of this course become a more intelligent machinist. He should supplement this course with the courses in mechanical drawing and mechanism, in order that his training for an all-round machinist or mechanic may be more complete.

For detailed description of subjects see page 19.

*Schedule of Studies.**First Year.*

	Monday.	Tuesday.	Thursday.	Friday.
7-8 P.M.	Mechanism.	Mechanical drawing.	-	Mechanism.
8-9 P.M.	Mathematics.	Mechanical drawing.	-	Mathematics.

Second Year.

7-8 P.M.	Shop.	Shop.	-	Machine drawing.
8-9 P.M.	Shop.	Shop.	-	Machine drawing.

Third Year.

7-8 P.M.	Machine drawing.	-	Shop.	Shop.
8-9 P.M.	Machine drawing.	-	Shop.	Shop.

VIIa. Cotton Finishing — 1 Year.**VIIb. Woolen and Worsted Finishing — 1 Year.**

In these courses machine work is supplemented by lectures and discussions pertaining to the many finishes given to fabrics. The action of soaps, water, steam, heat and cold upon cloth containing one fiber or combinations of fibers as used in commercial fabrics is carefully studied. These courses also help the finisher to broaden his knowledge of textile fabrics.

For detailed description of subjects see page 19.

SUBJECTS OF INSTRUCTION.

COTTON DEPARTMENT.

Cotton Yarn Manufacturing.

Instruction is given by means of lecture and demonstration. The outline of the course is as follows:—

FIBER.—Before taking up the details of the operation of manipulating the fiber into yarn, a careful study is made of the characteristics and classification, both botanically and commercially, of the many varieties of the cotton fiber. Methods employed in cultivating, marketing, grading and stapling are considered, and under these heads a detailed study is made of the types of gin employed.

OPENING AND PICKING.—Instruction in the preliminary operation of opening and picking covers the mechanical construction of the machines, their parts and adjustments, as fully as the manufacturing results accomplished by the machines. This includes such construction details as eveners, lap measuring and safety stop motion, grids, cleaning trunks, beaters, etc.; also operation details which involve the adjustment of waste, drafts and character of laps.

CARDING.—The process of carding is considered one of the most important, and proper time is devoted to the construction and operation of cards that the student may be familiar with the various parts of the card and the function and design of each. The construction and application of card clothing, as well as the methods of grinding, form a part of the work.

DRAWING.—Under this head is taken up the theory of doublings and their effect upon the quality of roving and yarn. Like previous and subsequent processes the machine construction forms an important part of the work. Proper stress is paid to such subjects as stop motions, drawing rolls and their covering, cleaners and eveners motions.

ROVING PROCESSES.—Under this head is studied the various machines known as the slubber, intermediate, fine and jack fly frames. The relative motion of the various parts of these machines is so complex that a good opportunity is here presented to fix in the student's mind the application of certain mechanical principles that are used in other departments and upon other machines in the manufacture of textile material. With each process of yarn manufacture is explained the systems of sizing and numbering, and under this head is taken up both the metric and English systems.

RING SPINNING AND TWISTING. — The consideration of spinning yarn by the ring frame method involves a knowledge of the uses to which the yarn is to be put, subsequent methods of handling that proper roving may be selected, suitable amounts of draft and twist provided, correct size of rings and travelers selected, building motions suitably adjusted, etc. The operation of twisting yarns is so closely related to spinning by the ring method that it is studied at the same time. This opens an almost limitless field of novelty yarn manufacture, and offers a very good opportunity to derive new types of yarn or new mechanism to produce the effects. Yarn defects are studied with reference to the cause and remedy.

MULE SPINNING. — This method of spinning is very different from that of the ring frame, and the mechanical details are more complicated. The student is furnished with new means of producing yarns, and can compare the relative advantage of each method. A thorough understanding of mule spinning is perhaps more a study of mechanical motions and their functions. This results almost invariably in assisting the student to understand previous processes and machines better because of his work on the mule. It is the object to make clear to the student's mind the principles underlying the construction and operation of the parts that control the drawing, twisting, backing off, winding, together with such special motions and devices as are used upon the modern mule.

COMBING. — This process is explained by lecture work and by operation and assembling of the various types of combs in service in the laboratory. The object of combing is fully considered, and the different means employed on the many types of combers on the market is studied. This includes such types as the Heilman, New Whitin and Nasmith combers.

Knitting.

This course, commencing with a study of hosiery yarns and their preparation for knitting, includes a study of the various stitches and their application in commercial fabrics; a study of the different knitting machines, including circular and flat spring and latch needle machines used in the manufacture of stockings, sweaters and underwear; and a study of looping and sewing machines. A part of the work consists of the assembling and adjusting of different types of knitting machines.

In addition, considerable time is spent in the analysis of knitted fabrics.

WOOLEN AND WORSTED DEPARTMENT.

Manufacturing.

RAW MATERIALS. — A study of raw materials which enter into the manufacture of woolen or worsted yarns, or are made into yarns by processes similar to those employed in the manufacture of woolen and worsted

yarns, would include silk, mohair, alpaca, vicuna, cashmere, camel's hair and cotton. In connection with these are considered shoddy, noils and extracts.

WOOL SORTING.—Familiarity with the various grades and kinds of wool is obtained by lecture. The various characteristics and properties are explained, as are also trade terms, such as picklock, XXX, XX, $\frac{1}{2}$ -blood, $\frac{3}{8}$ -blood, $\frac{1}{4}$ -blood, delaine, braid, etc. Some skill is acquired in the estimation of shrinkage and in judging the spinning qualities.

WOOL SCOURING.—The object of scouring and the methods employed are explained, and this involves the consideration of the soaps and chemicals used in washing; also the waste products and their utilization. Actual work is done in scouring a commercial quantity of wool by machines that are made similar in operation to regular commercial machines. A study is made of the effect of the hardness of water upon soap. At the same time the use of driers, their operation and regulation, is taken up, and the methods of carbonizing wool, noils, burr waste, rags, etc., are studied and explained.

BURR PICKING, MIXING, OILS AND EMULSIONS.—The use of burr pickers in cleaning wool and the use of mixing pickers in making color blends is covered by lecture and demonstration. Under the subject of oil and emulsions are taken up the characteristics of various oils and the means employed to test them.

This work is taken only by those students who are pursuing the Woolen Manufacturing Course.

CARDING.—The different systems of carding wool, depending on whether it is to be made into woolen or worsted yarns, are fully explained, as is also the construction, setting and operation of cards. A part of this work consists of a study of card clothing, its construction, application and grinding.

WOOLEN MULE.—The student studies thoroughly the operation of the mule as a whole, and acquaints himself with the various principal mechanisms, as, for example, the backing off and winding motions, the quadrant, builder-rail, faller regulation, etc.

TOP MAKING AND COMBING.—This branch takes up, besides the carding of the wool on a worsted card, the preparing processes, back-washing, also gilling of the stock before and after combing. The construction of the gill boxes and combs is studied by lectures. Later, quantities of stock are made into top and then into yarn.

The Noble, Lister and French combs are studied, and the various calculations to determine draft, noiling, productions, etc., are made.

DRAWING AND SPINNING.—The equipment in the laboratory offers opportunity to make worsted yarn by either the Bradford or open drawing system or by the French system. The process includes the various machines in the successive steps of making Bradford spun yarn, and the

functions of the different machines are studied. In the latter, or French system, the stock is run through the drawing machines, and the roving spun into yarn on the worsted mule. The same method of studying the mechanism and operations of these machines is followed as in the case of previous methods of instruction. The student by pursuing this course can compare the different methods of yarn manufacture and note the results of each.

With the instruction in spinning by the Bradford system is given work on the twistors and the effects that may be produced.

TEXTILE DESIGN AND WEAVING DEPARTMENT

Textile Design.

During the first year instruction is given in the subject of classification of fabrics, use of point or design paper, plain fabrics, intersection, twills and their derivation, sateen, basket and rib weaves, checks and stripes, fancy weaves, including figured and colored effects; producing chain and draw from design, and *vice versa*; extending and extracting weaves.

FOR COTTON GOODS.

During the second year consideration is given to fancy and reverse twills, diaper work, damasks, skip weaves, sateen fabrics with plain ground, backed fabrics, and multiple ply fabrics. Students are required to make original designs. Special attention is given to the consideration of color effects.

The analysis of these fabrics forms a part of the course in design. This also includes the necessary calculations required to reproduce the fabric or to construct fabrics of similar character.

FOR WOOLEN AND WORSTED GOODS.

During the second year the instruction given includes warp and filling backed cloth, figured effects produced by extra warp and filling, double cloths, multiple ply fabrics, cotton warps, blankets, bath robes, crêpes, filling reversible, Bedford cords, imitation furs, crêpons, matelasse and imitations, double plain, ingrains, velvets, corduroys, overcoatings, trouserings.

The analysis of these fabrics, together with the consideration of the shrinkages and dead loss in all fabrics, theory of diameter of yarns, and costs of mixer blends, is a part of this course.

The advanced work takes up the more complicated weaves adapted to harness work, and leads into leno and Jacquard designs. The following is a brief list of the subject heads, which will give some idea of the course:

double plain cloths, ingrains, tricots, chinchilla, tapestry, blankets, upholsteries, spot weaves, pile or plush, crêpon, matelasse and its imitations, piqué, marseilles, quilting and miscellaneous designs for Jacquard, leno, fustian, tissue fabrics and lappets.

Cloth Analysis.

In the first year this subject takes up in a systematic manner the analysis of samples illustrating the various cloth constructions for the purpose of determining the design of the weave and the amount and kind of yarns used, and forms the basis of calculation in the cost of reproducing any style of goods. The various topics discussed are reeds and setts; relation and determination of counts of cotton, woolen, worsted, silk and yarns made from the great variety of vegetable fibers; grading of yarns, folded, ply, novelty and fancy yarns; application of the metric system to yarn calculation; problems involving take-up, average counts, determination of counts of yarn, and weight of yarn required to produce a given fabric.

Cloth Construction.

The work includes the application of the different weaves and their combinations in the productions of fancy designs, both modified and original; the calculation involved in the reproduction of standard fabrics changed to meet varying conditions of weight, stock, counts of yarn and value.

Instruction in this subject, which is given by classroom work, is intended to bring together the principles considered under the subject of design, cloth construction, weaving and yarn making of previous years, and to show the bearing each has in the successful construction of a fabric.

Power Weaving.

Instruction in cotton weaving is carried on upon power looms in connection with the work in Textile Design and Cloth Analysis. This includes a study of the preparation of warps, beaming, dressing, sizing, drawing-in and making of chains, the cutting and lacing of cards, spooling and quilling and the machinery for the same. A study is made of warpers and sizing machines, both for cotton and woolen. Lectures are given to correspond with the progress of the student in the Power Weaving Laboratory covering the following subjects: loom adjustments, chain building, shuttle changing looms, dobby looms, single and double acting dobbies, handkerchief motions, leno weaving, center selvedge motions, filling changing looms, oscillating reeds, lappet motions, various shaker motions, towel and other pile cloth weaving, Jacquard looms, single and

double lift leno Jacquards, Jacquards of special design, tying up Jacquard harness. Instruction is also given in weaving on fancy woolen and worsted looms.

CHEMISTRY AND DYEING DEPARTMENT.

General Elementary Chemistry (Inorganic and Organic Chemistry).

Instruction in Elementary Chemistry extends through two years, and includes lectures, recitations and a large amount of individual laboratory work upon the following subjects: —

THEORETICAL CHEMISTRY. — Chemical action, chemical combination, combining weights, atomic weights, chemical equations, acids, bases, salts, Avogadro's law, molecular weights, formula, valence, periodic law, etc.

NON-METALLIC ELEMENTS. — Study of their occurrence, properties, preparations, chemical compounds, etc.

METALLIC ELEMENTS. — Study of their occurrence, properties, metallurgy, chemical compounds, etc.

The students take up, as thoroughly as time will permit, the qualitative detection of the more common metals and non-metals, with practical work.

This work, although necessarily elementary, is intended to prepare the student to more understandingly study the manufacture of dyestuffs, and coal tar colors in the more advanced courses which follow.

Qualitative Analysis.

The laboratory work during the second year of the Elementary Chemistry course consists entirely of Qualitative Analysis. While this course is necessarily taken up in an abbreviated and elementary manner, it is so arranged that the students may become familiar with the separations and the detections of the common metals and acids. This course is also preliminary to the work given in Analytical Chemistry.

During the first year of the Elementary Chemistry course most of the time will be devoted to the non-metals and theoretical chemistry, and the laboratory work will be briefly upon the non-metals.

During the second year the classroom work will be upon metals and the hydrocarbons and their derivatives, and the laboratory work will be qualitative analysis.

Textile Chemistry and Dyeing.

The outline of the lecture course given in Textile Chemistry and Dyeing is as follows:—

TECHNOLOGY OF VEGETABLE FIBERS.—Cotton, linen, jute, hemp, china grass. Chemical and physical properties, chemical compositions, microscopical study, and their action with chemicals, acids, alkalies and heat.

TECHNOLOGY OF ANIMAL FIBERS.—Wool, mohair, silk. Chemical and physical properties, chemical compositions, microscopical study, and their action with chemicals, acids, alkalies and heat.

TECHNOLOGY OF ARTIFICIAL FIBERS.—Study of the various forms of artificial silk, the process of manufacture, their properties and action with chemicals, acids and heat.

OPERATIONS PRELIMINARY TO DYEING.—Bleaching of cotton and linen; wool-scouring; bleaching, fulling and felting of wool; carbonizing; silk-scouring and bleaching; action of soap.

The bleaching of cotton is studied with description of the various forms of kiers and machinery used; also the action of the chemicals used upon the material, and the various precautions that must be taken in order to insure successful work.

Under this heading is included a study of the reagents used in the emulsive wool-scouring process, and their action upon the fiber under various conditions; also the most successful of the solvent methods for degreasing wool.

WATER AND ITS APPLICATION IN THE TEXTILE INDUSTRY.—Impurities present, methods for detection, their effect during the different operations of bleaching, scouring, dyeing and printing, and the methods used for their removal or correction.

The important subject of boiler waters is also studied under this heading, with a full discussion of the formation of boiler scale, its disastrous results, and the methods by which it may be prevented.

MORDANTS AND OTHER CHEMICAL COMPOUNDS USED IN TEXTILE COLORING, AND CLASSIFIED AS DYESTUFFS.—Theory of mordants, their chemical properties and application, aluminum mordants, iron mordants, tin mordants, chromium mordants, organic mordants, tannin materials, soluble oil, fixing agents, leveling agents, assistants, and numerous other compounds not dyestuffs that are extensively used in the textile industry.

Under this heading are included the definitions of various terms and classes of compounds used by textile colorists, such as color lakes, pigments, fixing agents, developing agents, mordanting principles and leveling agents.

NATURAL ORGANIC COLORING MATTERS.—Properties and application

of indigo, logwood, catechu or cutch, Brazil wood, cochineal, fustic, turmeric, madder, quercitron bark, Persian berries, and other natural dyestuffs that have been used in recent years by textile colorists.

MINERAL COLORING MATTERS. — Under this heading are discussed the properties of such inorganic coloring matters and pigments as chrome yellow, orange and green, Prussian blue, manganese brown, iron buff.

ARTIFICIAL COLORING MATTERS. — General discussion of their history, nature, source, methods of manufacture, methods of classification and their application to all fibers.

Special study of basic coloring matters, phthalic anhydride colors, including the eosins and phloxines; acid dyestuffs, Janus, direct cotton, sulphur and mordant colors, including the alizarines and other artificial coloring matter requiring metallic mordants; mordant acid and insoluble azo colors, developed on the fiber; reduction vat colors, aniline black and other artificial dyestuffs not coming under the above heads.

As each class of dyestuffs is taken up the details of the methods of applying them upon all the different classes of fabrics and in all the different forms of dyeing machines are thoroughly discussed; also the difficulties which may arise in their application, and the methods adopted for overcoming them.

MACHINERY USED IN DYEING. — A certain amount of time is devoted to the description of the machinery used in the various processes of textile coloring, which is supplemented as far as possible by the use of charts, diagrams and lantern slides.

During the third year of this course, if time permits, the more advanced subjects of union dyeing, textile printing, dye testing, color matching and color combining will be briefly considered.

Dyeing Laboratory.

Besides lectures and recitations upon the subject of Textile Chemistry and Dyeing, practical laboratory work is required. By the performance of careful and systematic experiments the student learns the nature of the various dyestuffs and mordants, their coloring properties, their action under various circumstances, and the conditions under which they give the best results. The more representative dyestuffs of each class are applied to cotton, wool and silk, and each student is obliged to enter, in an especially arranged sample book, a specimen of each of his dye trials with full particulars as to the conditions of experiment, percentage of compounds used, time, temperature of dye bath, etc.

For convenience and economy most of the dye trials are made upon small skeins or swatches of the required materials, but from time to time students are required to dye larger quantities in the full-sized dyeing machines.

Analytical Chemistry.

The object of this course will be to give the student a general idea of the underlying principles of Analytical Chemistry, with a sufficient amount of laboratory work to enable him to become proficient in performing the ordinary routine analysis of the textile plant. Frequent recitations will be held for the discussion of methods and the solution of stoichiometrical problems. Particular attention will be paid to the methods of both gravimetric and volumetric analyses commonly used in textile plants.

TEXTILE ENGINEERING DEPARTMENT.

Mechanics and Mechanism.

Under this heading are considered the principles which underlie the transmission of force and motion. After discussing units of measurement, such mechanical principles as are exemplified by the jackscrew, pulley block, lever, worm and wheel, wedge, wheel and axle, and differential pulley are studied. This is followed by instruction relative to the design and layout of pulleys, cams, belting, stepped and cone pulleys, quarter turn drives, gears and gearing, etc. Shop mathematics is a prerequired subject.

Strength of Materials.

This subject deals with the topic in such a way as to make the knowledge valuable and practical to a man engaged in machine, mill or building design. It relates to the proper stresses allowable in ordinary materials of construction, and the design of beams, columns, etc., to safely carry loads.

Mechanical Drawing.

The work in this subject is so laid out that at its completion a man shall be thoroughly familiar with the making of a working or shop drawing. After a study of the underlying principles of projections and instruction in penciling, inking, lettering and tracing, the subject of sketching and the making of detail drawings therefrom is especially stressed. The preparation of assembly drawings is finally considered. Shop mathematics is a prerequired subject.

Steam.

The instruction in this subject covers, so far as time permits, the elements of steam engineering. The topics covered are heat and its measurement, use of steam tables, types of boilers, engines and turbines, boiler

and engine room accessories, together with a study of the methods of testing the various types of apparatus. Actual tests on such equipment are made in the well-equipped laboratories of the school.

Electricity-1.

This course deals entirely with the theory and application of direct currents. The main subjects treated are —

Generators.	Wiring.
Motors.	Transmission.
Storage cells.	Direct-current instruments.

Electricity-2.

This course is a continuation of Electricity-1, and deals with alternating currents principally. The subjects treated are —

Alternators.	Transmission systems.
Transformers.	Alternating current instruments.
Motors.	Illumination.
Synchronous converters.	

Considerable laboratory work is given in connection with this course.

Mathematics-1.

This course is a continuation of the course in Shop Mathematics, and is intended as a foundation for the advanced courses in engineering. Some of the subjects treated are —

Factoring.	Graphical representation.
Fractions.	Logarithms.
Lineal equations.	Slide rule.
Theory of indices.	Quadratic equations.

Mathematics-2.

Before taking this course it is advisable that the student should be well grounded in the essentials of plane geometry. A general outline of the course follows: —

Trigonometry.	Partial fractions.
Simultaneous quadratics.	Conic sections.
Binomial theorem.	Derivative.
Theory of equations.	Maxima and minima.

Shop Mathematics.

The purpose of this subject is to give instruction in the practical application of arithmetic, geometry and algebra to everyday problems, and the topics which are covered are, briefly, addition, subtraction, multiplication, division, common and decimal fractions, ratio and proportion, common areas and volumes, and simple equations involving one unknown.

Machine Shop.

The course covers a series of lectures on care and management of machine-shop tools leading up to the actual operation of the same.

Among the exercises taken up by the student are bench work, tool grinding and tempering, straight and taper turning, thread cutting, drilling and boring, planer work, milling machine work, gear cutting, etc.

FINISHING DEPARTMENT.

Woolen and Worsted Finishing.

The outline of this course, which is given chiefly by means of lecture work, is as follows:—

BURLING AND MENDING.—Under this head is taken up for consideration the examination of flannel as it comes from the loom; the construction, use and location of the perch; the methods used in marking defects, measuring, weighing and numbering of cloths; also the methods of inspection for fancies, single cloths and double cloths. The object of burling, mending and the types of tables employed, the method of removing knots, runners, etc., the object of back shearing and the use of burling irons, the replacing of missing threads and the importance of sewing as a part of the finishing process, are all considered in detail. The removal of oil and tar spots as well as stains of various kinds is studied.

FULLING.—This branch covers a study of the conditions of the flannel as it comes from the loom, and the influence of oil, etc., upon the procedure. Considerable time is devoted to the various methods of producing a felt, the early types of stocks, hammer falling and crank stocks, and their modifications and development into the present type of rotary fulling mills of both the single and double variety. The details of construction in all machines are carefully taken up and include the design and composition of the main rolls, methods of covering, regulation and means of adjusting the pressure of traps and rolls, consideration of the shoes, the use and regulation of the various types of stop motion, the different types of stretchers, guide rolls and throat plates.

The theory of felt is taken up and the influence of pressure, moisture, heat, alkali and acid is considered, as well as the hygroscopic and felting

properties of different wool fibers. The preparation of the flannel for the mill and the usual methods of determining shrinkages, as well as the various methods of soaping, are given careful attention. The preparation of various fulling soaps and the value of each for the production of various degrees of felt, as well as the determination of the proper amount of alkali for various goods, are carefully studied and demonstrated. The manipulation of the various kinds of goods in the mill, viz., all wool, shoddies and mixed goods, is studied in classroom and by operation in the mili.

The change in weight and strength for each operation is carefully considered, as is also the value of the flocks made in each. A study of the various methods of flocking, such as dry and wet, is considered in both class and machine rooms. In each operation the defects likely to materialize are studied, as well as the cause thereof, and various methods of modifying or lessening them.

WASHING AND SPECK DYEING.— This branch considers the scouring, rinsing and washing of goods both before and after the fulling process; the various types of washers; and the details of construction, such as suds box, rolls, etc. The theory of scouring, uses of Fuller's earth, salt solutions and sours on the different kinds of goods are made clear by practical work in the machine room, where the effects due to improper scouring, such as stains, cloudy effects, wrinkles and unclean goods, are demonstrated. The discussion of the necessity of speck dyeing follows naturally from the study of these matters, and includes methods of preparation, materials used, application and tests required.

CARBONIZING.— This is an important branch of finishing, and includes a study of the various carbonizing agents, methods of application, strength of solutions and neutralizing, as well as the machines used. Stains and imperfections resulting from carbonizing are also considered. The drying and tentering machines and extractors employed are taken up at this point.

GIGGING, NAPPING AND STEAMING.— The construction in detail of the various types of gigs, nappers, steamers, wet gigs, rolling, stretching, crabbing and singeing machines is discussed, and their actions upon the cloth and the results obtained are explained.

Various methods of obtaining luster and the production of permanent finish are considered in connection with steaming and sponging.

BRUSHING, SHEARING AND PRESSING.— This includes, as do the other branches, a careful treatment of the machine employed, the preparation of the cloth for each process, the action of each machine in producing its part of the resultant effect. In manipulation of the shear consideration is given to its setting, grinding and adjustment. With the brushing machine the effect of steaming and moisture upon the luster and feel of the goods is shown. A study of the action of the presses, both plate and

rotary, involves consideration of pressure, steaming, etc. Special processes to obtain particular effects are taken up, and the part played by each machine is explained. The details involved in handling cloth on a commercial scale, as, for example, measuring, weighing, ticketing, numbering and rolling, are also explained. The necessary calculation and the methods of finishing all grades of goods are considered from time to time during the year.

Cotton Finishing.

The outline of the course in the finishing of cotton fabrics is as follows:—

CLOTH ROOM.—Instruction of the various goods and the object thereof; construction of the various types of inspecting and trimming machines.

SHEARING.—The object. A consideration of the various types of shears for treating one or both sides at the same time; also the use of the usual cleaning devices, such as emery, sand and card rolls, beaters and brushes; grinding and the adjustment of the various parts.

The use of brushing and cleaning machines, rolling devices and calender attachments for gray goods.

SINGING.—Developing and object of singeing; the construction of singers of all types, and for various purposes; the use of cooling tanks, steaming devices, rolling and brushing attachments.

Regulation of the flame for various goods, and adjustment of the parts; gas and air pressure, water-cooled rolls; the effect of moisture on the cost of singeing; the use of dry cans in connection with singeing; electric singeing.

WASHING.—Open width and string washers, their construction and operation; soaps, temperature, squeeze rolls; washing of various goods and the object thereof; stains.

NAPPING.—The object of napping and the usual method of treating goods; various types of nappers, single and double acting; felting nappers; construction, grinding and adjustment of various types.

WATER MANGLES.—Their object and the construction of various types; various rolls, —iron, husk, etc.; scutchers, their object and constructions.

STARCH MANGLES.—The object and construction of all types of starch mangles for pure starch and filled goods; various types of rolls, —brass, rubber, wood; action of doctor blades, etc.; regulation and object of pressure.

Methods of starching and finishing all standard goods, also a consideration of the various substances used, such as starch, softener and fillers; the preparation of starch and various methods of application.

DRYERS AND STRETCHERS.—Both horizontal and vertical, tenter frames, clips; the swing motion and the finishes thus produced; construction;

spraying machines, belt stretchers, button breakers; their object and construction.

CALENDERS. — The object and construction of all types, including the regulation of pressure and nips for the production of various finishes; various types of rolls and their uses, — steel, husk and paper; the use of hot and cold rolls; chasing, friction, embossing and Schriners calenders and the various finishes produced by each; production of watered effects; beetling machines.

Making up room, — yarding, inspecting; different types of folds; pressing, papering, marking.

OLNEY CHEMICAL ALUMNI OF THE LOWELL TEXTILE SCHOOL.

This association was organized in 1898 for the purpose of keeping its members in closer relationship with each other and with the school.

The membership consists of evening graduates from any of the advanced courses in chemistry and dyeing of the Lowell Textile School, and is composed of thirty members at present.

The annual meeting is held during the winter months, and the annual reunion is held the third Saturday of June at a place selected by the Board of Control.

OFFICERS.

President, JAMES H. SPURR, Jr., Lawrence, Mass.

Vice-President, ALEXANDER T. HERRON, Lawrence, Mass.

Secretary and Treasurer, HUGH CHRISTISON, Methuen, Mass.

BOARD OF CONTROL.

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HARRY LEAVER, Methuen, Mass.

This association will offer each year a book prize to the evening graduate who attains the highest standing in any one of the advanced courses of the Chemistry and Dyeing Department.

For information regarding this association please apply to Hugh Christison, 80 Pleasant Street, Methuen, Mass.

The winner of this prize for 1919 was Henry Dustin Grimes, Lawrence, Mass.

EVENING CLASS OF 1919.

Certificates awarded as follows, April 23, 1919:—

Course IIIb — 3 Years (Freehand Drawing).

Caroline Winona Crawford,	Lowell, Mass.
Lilla Corliss Ilsley,	Lowell, Mass.

Course IVa — 2 Years (Elementary Chemistry).

Gerald Dumont,	Lawrence, Mass.
Reynold Glendon High,	Methuen, Mass.
Milton Edward Johnson,	Lawrence, Mass.
William Naden,	North Andover, Mass.
Alfred Peever,	Methuen, Mass.
Delbert Eugene Ray,	Lowell, Mass.
Joseph Alexander Scott,	Lawrence, Mass.
Herbert Raymond Wilkinson,	Lawrence, Mass.

Course IVc — 3 Years (Analytical Chemistry).

Samuel Jennings Nichol,	Lowell, Mass.
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Course IVd — 4 Years (Textile and Analytical Chemistry).

Henry Dustin Grimes,	Lawrence, Mass.
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Course Va — 1 Year (Cotton Weaving).

Charles Peirce,	Lowell, Mass.
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Course Vb — 1 Year (Woolen and Worsted Weaving).

Ralph William Freeman,	Lowell, Mass.
William Roessel,	Lawrence, Mass.

Course VIa — 3 Years (Elements of Engineering).

Eugene Treffle Richard,	Dracut, Mass.
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Course VIb — 3 Years (Mechanical Drawing).

Alton Howard McCombs,	Lowell, Mass.
Paul Kachek Topjian,	Lowell, Mass.
Leland Austin Wells,	Lowell, Mass.

Course VI_d — 2 Years (Machine-shop Practice).

John Francis Duggan,	.	.	.	.	.	.	Lowell, Mass.
George Elmer Hope,	.	.	.	.	.	.	Lowell, Mass.
Wilfred Sidney Laporte,	.	.	.	.	.	.	Lowell, Mass.
John Francis Leary,	.	.	.	.	.	.	Lowell, Mass.
John Samuel Seymour,	.	.	.	.	.	.	Lowell, Mass.
Sumner Henry Williams,	.	.	.	.	.	.	Lowell, Mass.

Course VII_b — 1 Year (Woolen and Worsted Finishing).

Arthur Sigrid Swenson,	Andover, Mass.
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REGISTER OF EVENING STUDENTS, 1918-19.

Course I. — Cotton Manufacturing.
 Course Ia. — Cotton Spinning.
 Course Ib. — Knitting.
 Course II. — Wool Manufacturing.
 Course IIa. — Woolen Spinning.
 Course IIb. — Worsted Spinning.
 Course IIIa. — Textile Design.
 Course IIIb. — Freehand Drawing.
 Course IVa. — Elementary Chemistry.
 Course IVb. — Textile Chemistry and Dyeing.
 Course IVc. — Analytical Chemistry.
 Course IVd. — Textile and Analytical Chemistry.
 Course Va. — Cotton Weaving.
 Course Vb. — Woolen and Worsted Weaving.
 Course Vc. — Dobby and Jacquard Weaving.
 Course VIa. — Elements of Engineering.
 Course VIb. — Mechanical Drawing.
 Course VIc. — Machine Shop.
 Course VIe. — Mathematics.
 Course VIf. — Shop Mathematics.
 Course VIIa. — Cotton Finishing.
 Course VIIb. — Woolen and Worsted Finishing.

Postgraduate.

Barry, Alma M., IIIb,	.	.	.	.	.	Lowell, Mass.
Dwyer, David H., IIIb,	.	.	.	.	.	Lowell, Mass.
Labatte, Philomena U., IIIb,	.	.	.	.	.	Lowell, Mass.
Picard, Cecile L., IIIb,	Lowell, Mass.

Fourth Year.

Grimes, Henry D., IVd,	Lawrence, Mass.
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Third Year.

Crawford, Caroline W., IIIb,	Lowell, Mass.
Gardiner, Raymond E., VIa,	Lowell, Mass.
Grimes, Henry D., IVd,	.	.	.	.	.	Lawrence, Mass.
Hoban, Leo A., VIa,	.	.	.	.	.	Lawrence, Mass.
Isley, Lilla C., IIIb,	.	.	.	.	.	Lowell, Mass.
Kephaleias, Nicholas V., VIb,	.	.	.	.	.	Lowell, Mass.
Laurin, Rose A., IIIb,	.	.	.	.	.	Lowell, Mass.
McCombs, Alton H., VIb,	.	.	.	.	.	Lowell, Mass.
Martel, May A., IIIb,	.	.	.	.	.	Lowell, Mass.
Morgan, Ralph D., VIa,	.	.	.	.	.	Methuen, Mass.

Nichol, Samuel J., IVc,	Lowell, Mass.
Peterkin, Herbert L., VIa,	North Billerica, Mass.
Richard, Eugene T., VIa,	Dracut, Mass.
Silk, Adam, VIa,	Lowell, Mass.
Topjian, Paul K., Vlb,	Lowell, Mass.
Wells, Edwin C., VIa,	Lowell, Mass.
Wells, Leland A., Vlb,	Lowell, Mass.

Second Year.

Allison, Gordon G., IVb,	Lowell, Mass.
Anderson, Albert M., Vlb,	Lowell, Mass.
Ashjian, Krikor M., VIa,	Lawrence, Mass.
Bosca, Joseph H., Vlb,	Lowell, Mass.
Colburn, George B., VIa,	Lowell, Mass.
Conley, John F., Vld,	Lowell, Mass.
Corey, John H., Vlb,	Lowell, Mass.
Dean, Elmore T., Vlb,	Lowell, Mass.
Desmarais, Mary B. I., IIlb,	Lowell, Mass.
Dooley, Mary M., IIlb,	Lowell, Mass.
Duggan, John F., Vld,	Lowell, Mass.
Dumont, Gerald, IVa,	Lawrence, Mass.
Eastwood, Charles E., IVa,	Lowell, Mass.
Edwards, James A., VIa,	Lawrence, Mass.
Espinola, Manuel J., VIa,	Lowell, Mass.
Ford, Patrick F., VIa,	Lawrence, Mass.
Foster, Herbert L., Vlb,	Lowell, Mass.
Gow, Robert, Jr., IVa,	Lowell, Mass.
Hamblett, Olive L., IIlb,	Lowell, Mass.
Hansen, Henry A., Vlb,	Lowell, Mass.
Harhan, Mary F., IIlb,	Lowell, Mass.
Harhan, William T., IIlb,	Lowell, Mass.
Haviland, Raymond J., Vlb,	Lowell, Mass.
Hermanson, Carl H., Vlb,	Lowell, Mass.
Hibbs, Chester W., Vlb,	Lowell, Mass.
High, Reynold G., IVa,	Methuen, Mass.
Holman, Edith E., IIlb,	Lowell, Mass.
Hope, George E., Vld,	Lowell, Mass.
Innes, Archie K., IVb,	Lawrence, Mass.
Johnson, Milton E., IVa,	Lawrence, Mass.
Kannheiser, Frank J., IVb,	Lawrence, Mass.
Kennedy, Leo J., IVc,	Lawrence, Mass.
Laporte, Wilfred S., Vld,	Lowell, Mass.
Leary, John F., Vld,	Lowell, Mass.
Levy, Herman H., Vlb,	Lowell, Mass.
L'Heureux, Armand F., VIa,	Lowell, Mass.
Lippe, Celas, VIa,	Lowell, Mass.
Locke, Jack A., Vlb,	Lowell, Mass.
McCarthy, George P., Vld,	Lowell, Mass.
Magee, William J., IVc,	Lawrence, Mass.
Myhr, Norman, Vlb,	Lowell, Mass.
Naden, William, IVa,	North Andover, Mass.
Nelson, Albin H., Vlb,	West Chelmsford, Mass.
Ortel, Charles, Vlb,	Lowell, Mass.

Osgood, William C., IIb,	Andover, Mass.
Paquette, Alice C., IIIb,	Lowell, Mass.
Paquette, Yvonne E., IIIb,	Lowell, Mass.
Parkhurst, George E., IVc,	Lawrence, Mass.
Pearson, Paul E., VIb,	Lowell, Mass.
Peever, Alfred, IVa,	Methuen, Mass.
Photis, Christos J., IVa,	Lowell, Mass.
Ramos, Manuel S., VIId,	Lowell, Mass.
Ray, Delbert E., IVa,	Lowell, Mass.
Rosendale, Yngve, VIb,	Lowell, Mass.
Scott, Joseph A., IVa,	Lawrence, Mass.
Sears, Nathaniel, IIb,	Cambridge, Mass.
Seymour, John S., VIId,	Lowell, Mass.
Slater, William B., IIb,	Lawrence, Mass.
Spillane, James F., VIb,	Lowell, Mass.
Sullivan, Edward T., VIb,	North Andover, Mass.
Tellier, Herman J., VIId,	Lowell, Mass.
Tonks, Gerald F., IVa,	Lowell, Mass.
Topjian, Paul K., VIb,	Lowell, Mass.
Walsh, George T., IIIb,	Lowell, Mass.
Wilkinson, Herbert R., IVa,	Lawrence, Mass.
Williams, Sumner H., VIId,	Lowell, Mass.
Willis, Roland F., VIb,	Lowell, Mass.
Wylde, Paul L., IIb,	Lawrence, Mass.

First Year.

Abrahamson, Albert C., I,	West Chelmsford, Mass.
Allison, Gordon G., IVb,	Lowell, Mass.
Ambiehl, Victor E., Jr., VIb,	Lawrence, Mass.
Anderson, Clifford H., VIa,	Lowell, Mass.
Anderson, John L., IVa, VIe,	Lowell, Mass.
Andrews, Harold W., VIb,	Lowell, Mass.
Armstrong, Charles L., VIId,	North Billerica, Mass.
Ashjian, Krikor M., VIe,	Lawrence, Mass.
Ashworth, Harvey E., VIa, VIe,	Lowell, Mass.
Avery, Leon J., VIa, VIe,	Lowell, Mass.
Ayer, Howard G., VIb,	North Andover, Mass.
Babigan, Raymond, IVa,	Lowell, Mass.
Bachmann, Alfred R., VIb,	Lowell, Mass.
Barbera, Mary F., IIIb,	Lowell, Mass.
Barrett, John L., I,	Lowell, Mass.
Barrows, Clarence G., VIb,	Lowell, Mass.
Bayreuther, George W., VIa, VIIf,	Lawrence, Mass.
Beauchesne, Henry R., IIIb,	Lowell, Mass.
Bell, John R. V., VIId,	Lowell, Mass.
Binns, Jack W., IVa,	Lawrence, Mass.
Blessington, John J., IIIb,	Lowell, Mass.
Bosca, Joseph H., VIId,	Lowell, Mass.
Boughton, Ida M., VIa,	Lowell, Mass.
Bourgeois, George L., VIa,	Lowell, Mass.
Boy, Marie, VIb,	Lowell, Mass.
Brady, Thomas J., VIa, VIIf,	Lowell, Mass.
Brooks, Milton M., VIb,	Lowell, Mass.

Brooks, Sidney, VIId,	Lowell, Mass.
Brosnan, William F., IIb,	Lowell, Mass.
Buckley, William H., VIb,	Lowell, Mass.
Burns, Alfred A., Vb,	Lowell, Mass.
Burns, Felix A., IIb,	Lawrence, Mass.
Burns, Richard L., VIe,	Lowell, Mass.
Burris, Arthur L., VIa, VI,	Lowell, Mass.
Buthmann, Edwin A., IVa,	Lawrence, Mass.
Butler, Frank C., IVa,	Lowell, Mass.
Caddell, Walker M., VIb,	Lowell, Mass.
Cahill, John J., VIe,	Lowell, Mass.
Campbell, William A., IVa,	Lowell, Mass.
Carignan, Jeanne, IIIb,	Lowell, Mass.
Carter, George W., IIIb,	Lowell, Mass.
Casey, Henry J., Vfb,	Lowell, Mass.
Cassidy, Francis J., IVa,	Lowell, Mass.
Castles, Fred S., VIId,	Lowell, Mass.
Chandler, Oscar W., IVb,	Methuen, Mass.
Chapman, Fred U., I,	Lowell, Mass.
Chen, Shih C., Ia, IIIa,	Lowell, Mass.
Chou, Yen T., Ia, IIIa,	Lowell, Mass.
Chouinard, Joseph G., VIb,	Lowell, Mass.
Coburn, William H., I,	Lowell, Mass.
Colby, Rogers N., IVa,	Lowell, Mass.
Collins, Edward B., VIa,	Lowell, Mass.
Connor, John J., VI,	Lowell, Mass.
Conway, John E., Jr., VIe,	Lowell, Mass.
Cooke, Anson L., IVa,	Lawrence, Mass.
Cookson, Everett C., IVa,	Lawrence, Mass.
Coupe, Edward H., IVa,	Lawrence, Mass.
Crabtree, Henry J., VIb,	Lowell, Mass.
Crompton, Vera F., IVa,	Methuen, Mass.
Crowe, Fred D., VI,	Lowell, Mass.
Cummings, Leonard M., VI,	Lowell, Mass.
Cunningham, James F., VIa, VI,	Lowell, Mass.
Dagdigian, Peter, VIb,	Lawrence, Mass.
Dainton, William A., Jr., IVa,	Lowell, Mass.
Daley, Joseph M., VIId,	Lowell, Mass.
Daly, Alfred J., VIb,	Lowell, Mass.
Davis, Mark L., IVa,	Lawrence, Mass.
Dayson, Harry, IIb,	Lawrence, Mass.
DeCarteret, Paul, IIIb,	Lowell, Mass.
DeFaria, Joaquim G., VIId,	Lowell, Mass.
Deforge, John, VIId,	Lowell, Mass.
DeFusco, Emilio, IVa,	Lawrence, Mass.
Delisle, Alice G., IIIb,	Lowell, Mass.
Dempsey, Henry J., VI,	Lowell, Mass.
Denault, Charles H., VI,	Lowell, Mass.
Dennison, Harrison C., IIIa,	Methuen, Mass.
Dennison, Ralph H., II,	Lowell, Mass.
Derby, Laurice E., VIa, VI,	Lowell, Mass.
Desrosiers, Charles A., VIa, VI,	Lowell, Mass.
Dick, Otto C., VIa, VIb, VI,	Lawrence, Mass.

Dobson, David W., VIb,	Lowell, Mass.
Donahue, William J. P., VIc,	Lowell, Mass.
Doran, Fred A., VIb,	Lowell, Mass.
Ducharme, Andrew R., VIc,	Lowell, Mass.
Duffy, Adrian L., IIb,	Lowell, Mass.
Dunfey, Richard, VIc,	Lowell, Mass.
Dupont, Arthur J., IIb,	Lowell, Mass.
Edwards, Harry L., VIb,	Lowell, Mass.
Emery, Roland T., IVa,	Lawrence, Mass.
Estabrook, Donald H., VIa, VIc,	Lowell, Mass.
Farley, James S., IIb,	Lowell, Mass.
Farrell, Edward F., IIb,	Lowell, Mass.
Firth, Harry, VIc,	Lowell, Mass.
Flanagan, Francis M., IVa,	Lowell, Mass.
Flynn, Carlton F., VIb,	Lowell, Mass.
Foster, William M., IVa,	Lowell, Mass.
Fox, Russell M., IIIa,	Lowell, Mass.
Frasier, Ernest H., VIc,	North Billerica, Mass.
Frazee, Maurice D., IVa,	Lowell, Mass.
Freeman, Ralph W., IIIa, Vb,	North Billerica, Mass.
French, Henry C., II,	Lawrence, Mass.
Gagnon, Antonio, IIb,	Lowell, Mass.
Gagnon, Leo J., VIc,	Lowell, Mass.
Gatrios, Athas H., VIa,	Lowell, Mass.
Gaulin, Achille G., VIa, VIc,	Lowell, Mass.
Gauthier, Louis V., IIIa, Vb,	North Chelmsford, Mass.
Giard, Hormisdas A., VIc,	Lowell, Mass.
Gray, Guy B., VIa, VIb,	Lowell, Mass.
Guthrie, David, Jr., Ia,	Lawrence, Mass.
Hager, Wilbur F., VIIb,	Lawrence, Mass.
Halliday, Frank, IVa,	Lowell, Mass.
Hannam, Trueman, IVa,	Methuen, Mass.
Hansbury, John J., VIb,	Lowell, Mass.
Hanscom, Thomas H., VIa,	Lowell, Mass.
Hardman, David C., IVa,	Lowell, Mass.
Harnden, Edward F., VIc,	Lowell, Mass.
Hebert, William, VIc,	Lowell, Mass.
Hemmerling, Herbert P., VIa, VIc,	Lawrence, Mass.
Henry, Berthe, IIb,	Lowell, Mass.
Herzog, George E., IVa,	Lawrence, Mass.
Hill, Ralph W., I,	Nashua, N. H.
Hinsch, Paul W., IVa,	Methuen, Mass.
Holland, Ralph J., VIb,	Lowell, Mass.
Holland, Stephen J., VIc,	Lowell, Mass.
Holmes, Nelson C., VIa,	Lowell, Mass.
Hood, George C., I,	Lowell, Mass.
Hope, George E., VIc,	Lowell, Mass.
Horsfall, Benjamin H., IVa,	Lowell, Mass.
Houston, George E., VIc,	Lowell, Mass.
Hoyt, Elmer B., VIc,	North Chelmsford, Mass.
Hume, Henry, VIb,	Lowell, Mass.
Ingle, Ernest, Ia, IIIa,	Lowell, Mass.
Jarrett, John F., VIa, VIb,	Lowell, Mass.

Jodoin, Arthur, VIa, VIi,	Lowell, Mass.
Johnson, Robert S., VIa,	Lowell, Mass.
Jones, Lawrence W., VIa, VIb, VIe,	Lowell, Mass.
Judge, Paul W., VIb,	Lowell, Mass.
Kalil, Thomas M., IIb,	Lowell, Mass.
Kaschak, Anthony H., VIa, VIb, VIi,	Lowell, Mass.
Keddie, James A., VIa, VIi,	Lowell, Mass.
Kelley, Francis T., VIa,	Lowell, Mass.
Kelley, Patrick L., VIi,	Lowell, Mass.
Kennedy, Gerald M., VIb,	Chelmsford, Mass.
Kennedy, Ruth V., IIIb,	Lowell, Mass.
Kenyon, James, VIa,	Lowell, Mass.
Kirk, Robert J., VIi,	Lowell, Mass.
Klock, Frank D., VIi,	Lowell, Mass.
Labatte, Philomena U., IIIa,	Lowell, Mass.
Labrie, Hermina, IIIb,	Lowell, Mass.
Laferriere, Henry C., IIIb,	Lowell, Mass.
Lafountain, Howard L., VIi,	Lowell, Mass.
Lajeunesse, Wilfred, VIb,	Lowell, Mass.
Lambert, Arthur, VIi,	Lowell, Mass.
Lambert, Blanche A., IIIb,	Lowell, Mass.
Lamoureux, Leon W., IVa,	Lowell, Mass.
Larson, Henry W., VIb,	Lowell, Mass.
LaRue, Isabella G., VIb,	Lowell, Mass.
Lashna, Carl A., VIa, VIi,	Lowell, Mass.
Laycock, Berry, IVa,	Lowell, Mass.
Laycock, Frank E., IVa,	Lawrence, Mass.
Leach, Merle C., VIb,	North Chelmsford, Mass.
Leary, John V., VIb,	Lowell, Mass.
Leclair, Harold J., VIi,	Lowell, Mass.
Leibold, Fred J., IIb,	Lowell, Mass.
Leighton, Carl, VIb,	Lowell, Mass.
Levasseur, Emery, VIa, VIi,	Lowell, Mass.
Levesque, Eva E., IIIb,	Lowell, Mass.
Levy, Herman H., VIi,	Lowell, Mass.
L'Heureux, Armand F., VIb,	Lowell, Mass.
L'Heureux, Armand P., VIi,	Lowell, Mass.
Lippe, Camille, VIa,	Lowell, Mass.
Lippe, Lucien G., VIa, VIi,	Lowell, Mass.
Lloyd, Fred, IVa,	Methuen, Mass.
Lyons, William P., VIa, VIi,	Lowell, Mass.
McArthur, John M., VIi,	Lowell, Mass.
McCarthy, Luke E., VIb,	Lowell, Mass.
McClure, William J., VIb,	Lowell, Mass.
McCluskey, Dennis J., VIb,	North Chelmsford, Mass.
McCluskey, James L., VIi,	North Chelmsford, Mass.
McDonald, Walter A., VIb,	Lowell, Mass.
MacDougall, Nelson, VIa, VIi,	Lowell, Mass.
MacElroy, Leonard S., IVa,	Chelmsford, Mass.
McElroy, Wallace C., Ia,	Lowell, Mass.
MacKenzie, Allan N., IVa,	Lowell, Mass.
McNenney, Thomas F., Jr., IVa,	Lowell, Mass.
Mansaur, William, IIIb,	Lowell, Mass.

Marchand, Arthur J., VIId,	Lowell, Mass.
Markham, Ralph W., IVc,	Lowell, Mass.
Marlowe, Fred W., VIa,	Lowell, Mass.
Marsden, John H., Vb,	Lowell, Mass.
Martin, Leo A., VIb,	Lawrence, Mass.
Mayville, William J., Jr., VIId,	Lowell, Mass.
Meehan, Paul F., IIIb,	Lowell, Mass.
Mertrud, Albert E., IVa,	Lowell, Mass.
Miale, Cosimo, IIIb,	Lowell, Mass.
Midgley, Bertrand, VIId,	Lowell, Mass.
Miller, Joseph A., VIb,	Lowell, Mass.
Miner, Victor A., VIb,	West Chelmsford, Mass.
Morgan, Michael D., IVc,	Lowell, Mass.
Morrison, Leon A. S., I,	Lowell, Mass.
Moynahan, Andrew J., VIId,	Lowell, Mass.
Murphy, David F., IVa,	Andover, Mass.
Nakaoka, Masno, VIIa, VIIb,	Cambridge, Mass.
Nicoll, John, IVc,	Lowell, Mass.
Noonan, Thomas M., VIb,	Lowell, Mass.
Nystrom, Herbert W., VIId,	West Chelmsford, Mass.
O'Brien, Raymond D., IIb, IIIa,	Lowell, Mass.
O'Connor, John, VIc,	Lowell, Mass.
O'Leary, John A., IVa,	Lawrence, Mass.
Oates, Robert E., VIb,	Lowell, Mass.
Oshima, Tokuzaimon, VIIa, VIIb,	Cambridge, Mass.
Palm, Henry W., VIa, VIc,	Lowell, Mass.
Palm, Herbert E., Ia,	Lowell, Mass.
Palmer, Hazel J., VIb,	Lowell, Mass.
Palmer, Mona B., IVa,	Lowell, Mass.
Palmer, Thomas R., II,	Lawrence, Mass.
Parker, Lena F., I,	Lowell, Mass.
Patterson, James A., VIa, VIc,	Lowell, Mass.
Patterson, Robert J., IIb,	Lowell, Mass.
Pearl, Phillip A., VIc,	Lawrence, Mass.
Peever, Alfred, IVb,	Methuen, Mass.
Peirce, Charles, Va,	Lowell, Mass.
Peklaris, Spyros A., VIa, VIc,	Lowell, Mass.
Pendleton, Burton F., VIa, VIb, VIc,	Lowell, Mass.
Perlman, Louis J., VIb,	Lowell, Mass.
Perrault, Armand J., IIIb,	Lowell, Mass.
Perrault, Edward A., IIIb,	Lowell, Mass.
Perry, Thomas F., VIb,	Lowell, Mass.
Peterkin, Herbert L., VIc,	North Billerica, Mass.
Peters, Arthur, VIa,	Lowell, Mass.
Petrie, Harold O., VIb,	Chelmsford, Mass.
Pickel, George E., Jr., IVa,	Lowell, Mass.
Place, Christopher, VIId,	Lowell, Mass.
Popp, William, VIa,	Lowell, Mass.
Porteck, Ernest, VIb,	Lowell, Mass.
Potter, Richard W., I,	Lowell, Mass.
Potvin, Louis J., VIId,	Lowell, Mass.
Powell, Robert B., II,	Boston, Mass.
Powers, James H., IIIb,	Lowell, Mass.

Proctor, James C., VIa, VII,	Lawrence, Mass.
Quigley, Joseph G., IIIB,	Lowell, Mass.
Ralls, Francis L., VIB,	Lowell, Mass.
Ratelle, Aureore, IIIB,	Lowell, Mass.
Rawlinson, Arnold W., Ia,	Lowell, Mass.
Regis, Georgiana, IIIB,	Lowell, Mass.
Reynolds, Harrison G., Ia,	Readville, Mass.
Reynolds, Henry T., VIa,	Lowell, Mass.
Rhodes, Myron W., VIa, VI,	Lowell, Mass.
Richard, Fred E., VIa,	Dracut, Mass.
Richard, Morris H., VIB,	Lowell, Mass.
Richardson, Mabel A., IVa,	Methuen, Mass.
Riddell, Albert, I,	Lawrence, Mass.
Rigby, Richard P., IVa,	Lowell, Mass.
Roarke, James F., VID,	Lowell, Mass.
Robbins, Harry C., IVa,	Lowell, Mass.
Robbins, Lewis, Jr., VIa, VIE,	Lowell, Mass.
Robillard, Hector E., VIB,	Lowell, Mass.
Roebuck, Arthur F., IVa,	Lawrence, Mass.
Roessel, William, Vb,	Lawrence, Mass.
Rostron, Robert, Ia, IIIa,	Lowell, Mass.
Rousseau, Armand, VID,	Lowell, Mass.
Roux, Albert C., VIa, VIB, VI,	Lowell, Mass.
Russell, Agnes G., VIB,	Lowell, Mass.
Ryan, Peter F., IIB,	Lawrence, Mass.
St. Amand, Alfred, VID,	Lowell, Mass.
St. Jean, Joseph C. H., VIa, VI,	Lowell, Mass.
St. Jean, Leo J., VIa, VIB, VII,	Lowell, Mass.
St. John, Henry J., IIIB, VIB,	Lowell, Mass.
Saunders, Charles H., Jr., VIa, VIE,	Lowell, Mass.
Searle, Edward H., IIIa,	Methuen, Mass.
Sears, Nathaniel, IIB,	Cambridge, Mass.
Senior, Doris M., IIIB,	Wamesit, Mass.
Shaugnessey, Alfred H., Jr., VIa, VI,	Lowell, Mass.
Shea, Lawrence J., VIB,	Lowell, Mass.
Sheehan, Dennis J., Jr., VIa,	Lowell, Mass.
Sheehan, Frank A., VIa,	Lowell, Mass.
Shellian, Souren, VIa, VIB, VI,	Lowell, Mass.
Sibley, Clarence C., VII,	Lowell, Mass.
Sidebottom, Leon W., VIIa,	Lowell, Mass.
Silk, Adam, VI, VIE,	Lowell, Mass.
Simpson, Carl F. R., VIa, VI,	Wilmington, Mass.
Simpson, Harold T., VIa, VI,	Wilmington, Mass.
Sinnig, Otto R., IVc,	Lawrence, Mass.
Slater, William B., IIB,	Lawrence, Mass.
Small, Harvey L., VIa, VI,	Lowell, Mass.
Smith, Charles H., VID,	Lowell, Mass.
Smith, George L., VIB,	Lawrence, Mass.
Smith, Joseph, VIa, VI,	Lowell, Mass.
Staveley, Norris, VID,	Lowell, Mass.
Strobel, William, VID,	Lowell, Mass.
Strowburg, Harry V., VIB,	Lowell, Mass.
Sullivan, Edward B., II,	Lowell, Mass.

Swain, Clifton F., II,	.	.	.	.	.	Methuen, Mass.
Swanson, Victor E., IVc,	.	.	.	.	.	Lowell, Mass.
Swenson, Arthur S., VIIb,	.	.	.	.	.	Andover, Mass.
Sykes, Alvin E., IIb,	.	.	.	.	.	Lowell, Mass.
Tacy, Alonzo C., IVa,	.	.	.	.	.	Lawrence, Mass.
Tefft, John A., Vlb,	.	.	.	.	.	Lowell, Mass.
Tefft, Lawrence H., VIa,	.	.	.	.	.	Lowell, Mass.
Tessier, Arthur, VIa, VIc,	.	.	.	.	.	Lowell, Mass.
Thumm, Carl G., VIa,	.	.	.	.	.	Lowell, Mass.
Topjian, Paul K., VIa,	.	.	.	.	.	Lowell, Mass.
Tranche, George A., IVa,	.	.	.	.	.	Lowell, Mass.
Trinker, Robert G., I,	.	.	.	.	.	Lowell, Mass.
Veiga, Dominick, Vlb,	.	.	.	.	.	Lowell, Mass.
Voisard, Louis J., VIa, VIc,	.	.	.	.	.	Lowell, Mass.
Waldron, Linwood J., VIa,	.	.	.	.	.	Lowell, Mass.
Walker, George M., IVa,	.	.	.	.	.	Lowell, Mass.
Wang, Yung-chi, Ia, IIIa,	.	.	.	.	.	Lowell, Mass.
Ward, John J., VIc,	.	.	.	.	.	Lowell, Mass.
Ware, George C., VIa,	.	.	.	.	.	Lowell, Mass.
Watters, John, I,	.	.	.	.	.	Lowell, Mass.
Wells, Edwin C., VIc,	.	.	.	.	.	Lowell, Mass.
West, Richard E., II,	.	.	.	.	.	Lowell, Mass.
Whitefield, Donald A., II,	.	.	.	.	.	Lawrence, Mass.
Whitston, Arthur F., Vlb,	.	.	.	.	.	Lowell, Mass.
Wilkinson, Harold A., Vlb,	.	.	.	.	.	Dracut, Mass.
Wilkinson, Herbert R., IVb,	.	.	.	.	.	Lawrence, Mass.
Williams, Harold L., Vlb,	.	.	.	.	.	Lawrence, Mass.
Willis, Roland F., Vlb,	.	.	.	.	.	Lowell, Mass.
Wong, Guoy H., Ia, IIIa,	.	.	.	.	.	Lowell, Mass.
Wood, William H., I,	.	.	.	.	.	Lowell, Mass.
Yeomans, Herbert D., II,	.	.	.	.	.	Lowell, Mass.
Young, Fred L., IVa,	.	.	.	.	.	Lowell, Mass.
Zeiner, Herman P., VIc,	.	.	.	.	.	Lowell, Mass.
Zeiner, Paul O., VIa, VIc,	.	.	.	.	.	Lowell, Mass.

REGISTER OF CERTIFICATE HOLDERS.

The following list has been corrected in accordance with information received previous to July 1, 1919. Any information regarding incorrect or missing addresses and occupations is earnestly solicited.

[P. G. indicates postgraduate course.]

- Abbott, Arthur G., Vb, '13.** Died Aug. 16, 1916.
- Abbott, Paul W., Ia, '06.** Aircraft Engineer, Lincoln Motor Company, Detroit, Mich.
- Ackroyd, Theodore C., I Ib, '07.** Second Hand, Arlington Mills, Lawrence, Mass.
- Adams, Henry S., IIa, '03.** Secretary and Treasurer, Springstein Mills, Chester, S. C.
- Adams, Michael E., VI, '04.** Sales Agent, Bay State Milling Company, Boston, Mass.
- Adams, William R., IIa, '02.** North Andover, Mass.
- Alexander, Mrs. James (Smith, Mae V.).**
- Allen, William J., IVa, '13; IVb, '17.** Assistant Dyer, Pacific Print Works, Lawrence, Mass.
- Alter, Frederick A., IVa, '14.** With National Aniline and Chemical Company, Buffalo, N. Y.
- Amiot, Louis H., Va, '06.** With American Hide and Leather Company, Lowell, Mass.
- Anderson, Carl A., IV, '09.** Machinist, Mead & Morrison, Boston, Mass.
- Anderton, Harry, Va, '10; Vb, '13.** Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
- Andrews, Oliver, Ia, Va, '11.** Cotton Goods Broker, Eben E. Whitman & Co., New York City.
- Armitage, Ernest, Vb, '15.** Loomfixer, Ayer Mills, Lawrence, Mass.
- Armstrong, Elias B., I Ib, '06.** Agent, Hamilton Woolen Company, Southbridge, Mass.
- Armstrong, John W., IVa, '18.** Electrician's Helper, Waterhead Mills, Lowell, Mass.
- Arnold, Warren H., VIIb, '08; IIIa, '09.** Overseer of Weaving, Kent Manufacturing Company, Clifton Heights, Pa.
- Aspinall, William, I Ib, '01.** Chauffeur, Tamworth, N. H.
- Atkinson, Henry, IIIa, '15.** Section Hand, Arlington Mills, Lawrence, Mass.
- Atkinson, Norman, Vb, '10.** Of Whitwham & Atkinson, Lawrence, Mass.
- Atkinson, Reginald C., IVa, '13; IVb, '17.** 59 1-2 South Whipple Street, Lowell, Mass.
- Axon, Charles M., Vb, '17.** Loomfixer, Marland Mills, Andover, Mass.
- Bailey, Carl E., Ia, '10.** President and Treasurer, Franklin Mills Corporation, Franklin, Mass.
- Bailey, Rothwell, Va, '09.**
- Bain, William A., VIIb, '07.** Dyer, Oakland Mills, Oakland, Me. /

- Bake, Herbert**, IIIa, '05; **P. G.**, IIIa, '06; **VIIb**, '07; **P. G.**, IIIa, '09. Assistant Inspector of Hull Material, Navy Department, Boston, Mass.
- Bakewell, Albert**, Vb, '14. With Anderson's Tire Shop, Lowell, Mass.
- Ballinger, Frederick W.**, IIb, '07. Overseer, Silesia Worsted Mills, North Chelmsford, Mass.
- Ballinger, Raymond F.**, VIIb, '15. Second Hand, United States Worsted Company, North Chelmsford, Mass.
- Ballinger, William E.**, IIb, '11. Overseer, United States Bunting Company, Walsh's Mill, Lowell, Mass.
- Balmforth, James H.**, IIa, '03; IIa, IIb, '04. Postal Clerk, P. O., Bloomfield, N. J.
- Balmforth, Martha (French, Mrs. Irving)**, IIIa, '03. Tewksbury, Mass.
- Balmforth, William F.**, VI, '04. District Manager, Newark Star-Eagle, Newark, N. J.
- Bamber, William E.**, VIa, '18. Electrician, Harry F. Harding, Lowell, Mass.
- Bamford, John T.**, IIIa, '17. Pattern Weaver, Sutton's Mills, North Andover, Mass.
- Banks, Jonas**, Va, '09; Vc, '10. Loomfixer, Boott Mills, Lowell, Mass.
- Barber, James E.**, IIb, '07. Died April 20, 1918.
- Bardsley, James A.**, Vb, '18. Loomfixer, Pacific Mills, Lawrence, Mass.
- Barker, John P.**, V, '04.
- Barlow, Robert**, V, '02. Lowell, Mass.
- Barnes, Hammond**, Ia, Va, '14; IIIa, '16. United States Military Service.
- Barnes, Joseph**, Ia, '11.
- Barr, Mrs. John E. (Butler, Elizabeth M.)**.
- Barraclough, John C.**, Ia, '07. Foreman, Arlington Mills, Lawrence, Mass.
- Barrett, John H.**, VIIa, '18.
- Barrington, James L.**, IV, '08. Dyestuff Salesman, Essex Aniline Works.
- Barrington, John A.**, IV, '04. Vice-President and Sales Manager, Essex Aniline Works, Boston, Mass.
- Barrows, Ariston K.**, Va, '15; Ia, '17. Second Lieutenant, Ordnance Department, Metuchen, N. J.
- Barry, Alma M.**, IIIb, '17. With Lowell Hosiery Company, Lowell, Mass.
- Barry, Edward J.**, IIIa, '03. Overseer, Salmon Falls Manufacturing Company, Salmon Falls, N. H.
- Bassett, Cyrus J.**, Vb, '13. Weaver, United States Bunting Company, Lowell, Mass.
- Bastow, Henry**, IIIa, '03; V, '05. Textile Inspector, Quartermaster's Department, Cambridge, Mass.
- Bastow, Percy**, IVa, '11. Dyer's Assistant, Wood Worsted Mills, Lawrence, Mass.
- Bastow, Stephen W.**, IV, '07. Overseer, Dyeing and Bleaching, Nashua Manufacturing Company, Nashua, N. H.
- Baxter, Alvah J.**, IIa, '03. Cost Clerk, Wood Worsted Mills, Lawrence, Mass.
- Baxter, Walter**, Vb, '16. United States Military Service.
- Bayard, Pierre P.**, IIIa, '07. French Manager, Oliver Chilled Plow Works of South Bend, Ind., at Paris, France.
- Bean, Winthrop S.**, IVa, '16. In dye house, Merrimack Manufacturing Company, Lowell, Mass.
- Beaulieu, William E.**, IIb, '13. Machinist, International Steel and Ordnance Corporation, Lowell, Mass.
- Beech, Wilfred**, Ia, '12. Toolmaker, General Electric Company, Newark, N. J.

- Begen, Thomas W., I Ib, '07; I Ib, '08.** Overseer, Washington Mills, Lawrence, Mass.
- Bell, Charles W., VIa, '13.** Foreman Electrician, Rhode Island Street Railway Company, Providence, R. I.
- Bell, Frederick W., IIa, '05.** Machinist, United States Cartridge Company, Lowell, Mass.
- Benoit, Benjamin L., VIb, '09.** Clerk, Bay State Cotton Corporation, Lowell, Mass.
- Benoit, William A., Va, '07.** Second Hand, Everett Mills, Lawrence, Mass.
- Benson, George E., Ia, '16.** Cotton Broker, John Mallock & Co., Boston, Mass.
- Bernard, Joseph E., VI d, '12.** Machinist, Upton & Gilman Company, Lowell, Mass.
- Berry, Alfred H., VI, '08.** Electrical Engineer, Silesia Worsted Mills, North Chelmsford, Mass.
- Berry, Frank M., IIIa, '99; V, '01.** Deceased.
- Berry, Percy W., Vb, '10.** Mill Crayon Manufacturing, Walbuck Crayon Company, Lawrence, Mass.
- Billings, Rupert F., IVa, '16.** Student, Lowell Textile School, Lowell, Mass.
- Binns, Heaton, II, V, '99; VI, '02.** Foreman, James Irving & Son, Chester, Pa.
- Birdsall, James E., I Ib, '15; Vb, '16.** Third Hand in Weave Room, Arlington Mills, Lawrence, Mass.
- Birkby, Charles H., IVa, '11.** Assistant Superintendent, Charles H. Felstein Company, Philadelphia, Pa.
- Bixby, Edward E., IIIa, '14.** Draftsman, Saco-Lowell Shops, Lowell, Mass.
- Black, Alexander S., Vb, '13.** Bookkeeper, Pacific Mills, Lawrence, Mass.
- Blades, Albert H., IVa, '18.** Laboratory Assistant, Pacific Mills, Lawrence, Mass.
- Blais, Emile, VI d, '12.** Machinist, United States Cartridge Company, Lowell, Mass.
- Blanchard, John W., VI d, '18.** Blacksmith, Lamson Company, Lowell, Mass.
- Blanchette, Eugene, II Ib, '12.** 818 Merrimack Street, Lowell, Mass.
- Bohne, Frederick C., Vb, '17.** With Pacific Print Works, Lawrence, Mass.
- Boije, Walter F., I Ib, VIIb, '12.** Section Hand, Wood Worsted Mills, Lawrence, Mass.
- Bonney, Nathaniel H., IVa, '15.** Draftsman, Pacific Mills, Lawrence, Mass.
- Booth, Arthur, IIIa, '09.** Overseer, Bates Manufacturing Company, Lewiston, Me.
- Bordeleau, Georges A., IIIb, '15; IVa, '16.** Pharmacist, Waterbury Drug Company, Waterbury, Conn.
- Bottomley, Wilfred, VIa, '17.** Generator and Switchboard Attendant, Washington Mills, Lawrence, Mass.
- Boucher, John L., VI, '04.**
- Bouillé, Arthur L., Vb, '07.** Loomfixer, Washington Mills, Lawrence, Mass.
- Bourchard, Ethan J., Vc, '10.**
- Bourchard, Robert R., Vb, '10.**
- Bowen, Herbert E., IIIa, '09.** Overseer of Knitting, Ipswich Mills, Ipswich, Mass.
- Bowie, Samuel A., VI, '05.** Chief Engineer, Pacific Mills, Lawrence, Mass.
- Bowles, Willis H., Va, '16.** Loomfixer, Hamilton Manufacturing Company, Lowell, Mass.
- Bowring, George P. B., VI, '02.** Foreman, Forge Shop, Chapman Manufacturing Company, Winchester, Mass.
- Boyle, John E., Va, '14.** Clerk, Waterhead Mills, Lowell, Mass.

- Brainerd, Albert C., Ia, '12.** Second Hand, Everett Mills, Lawrence, Mass.
- Brainerd, Harry C., Ia, '12.** Second Hand, Lower Pacific Mills, Lawrence, Mass.
- Brainerd, Irving L., Ia, '02.** Deceased.
- Bramley, Charles, Va, '12.**
- Branch, Guy E., Iib, '15; Vb, '16; VIIb, '17.** Instructor, Worsted Department, Lowell Textile School, Lowell, Mass.
- Brandy, William F., IVa, '14; IIa, '15; Iib, IVb, '17.** Assistant Superintendent, Henry Klous, Inc., Lawrence, Mass.
- Brannen, Leon V., Iia, '07.** Philadelphia, Pa.
- Breen, James D., Vc, '13.** Second Hand, Tremont & Suffolk Mills, Lowell, Mass.
- Breen, John P., Vb, '13.** With Bay State Mills, Lowell, Mass.
- Broadbent, James H., Vb, '08.** With United States Bunting Company, Lowell, Mass.
- Broadbent, James T., Ia, '99.** Agent and Manager, Meritas Mills, New York City.
- Broadbent, William, Vb, '08.** With Bethlehem Steel Works, Quincy, Mass.
- Broderick, Thomas H., VIIb, '12.** In charge of fulling, Stevens Mills, North Andover, Mass.
- Brooks, Noah, IIIa, V, '01.**
- Brouder, John J., IIIa, '06; VIIb, '07.** Designer, Ayer Mills, Lawrence, Mass.
- Brown, James H., VIa, '14; Vid, '16.** Electrical Operator, Lancaster Mills, Clinton, Mass.
- Brown, James P., IIIa, '05; P. G., IIIa, '06.** Lowell, Mass.
- Brown, James T., IIIa, '08.** Overseer, Highland Worsted Mills, Camden, N. J.
- Brown, Leon E., VIa, '14.** Foreman, Pattern and Carpenter Department, Lamson Company, Lowell, Mass.
- Brown, William F., Vlb, '11.** Master Mechanic, United States Worsted Company, Lowell, Mass.
- Brown, William G., Iib, '06.** Wool Buyer, Quitman, Ga.
- Browne, Charles D., Ia, '12.** Assistant Manager, Sherman Manufacturing Company, Sherman, Tex.
- Bruce, William, VIIb, '17.** Second Hand, Brightwood Manufacturing Company, North Andover, Mass.
- Bryant, Ernest L., VI, '05.** With Scovill Manufacturing Company, Waterbury, Conn.
- Bryden, Frederick A., Jr., IVa, '16; IVb, '18.** Assistant in Cotton Finishing, Pacific Print Works, Lawrence, Mass.
- Buckley, Harry, IV, '08.** Assistant to Agent, Acadia Mills, Lawrence, Mass.
- Buckley, Richard A., Vb, '09.** Time-Recorder, United States Cartridge Company, Lowell, Mass.
- Bucklitsch, Gustave J., Iib, '07.** Overseer of Combing, Washington Mills, Lawrence, Mass.
- Bunce, Raymond H., Vb, '09.** Salesman, American Woolen Company, New York City.
- Burgess, Joseph H., Va, '06; Vb, '07; IIIa, '10.** Loomfixer, Arlington Mills, Lawrence, Mass.
- Burghardt, Edward S., Iia, '02.**
- Burghardt, Paul C., Iia, '01.**
- Burke, George J., VIIb, '12.** With Merrimack Woolen Company, Dracut, Mass.
- Burke, James F., Vc, '11.** With Lowell Bleachery, Lowell, Mass.
- Burke, John J., Jr., IVa, '16.** Leather Chemist, American Hide and Leather Company, Lowell, Mass.

- Burke, Thomas F., Ia, '05.** Treasurer, Barber Manufacturing Company, Lowell, Mass.
- Burnham, Joseph W., IIIa, '06.** Works Inspector, Equipment Division, Ordnance Department, Washington, D. C.
- Burnham, Wilmont V., Vb, '06.** Lawrence, Mass.
- Burns, Edward J., IV, '05.** Ballistic Laboratory, United States Cartridge Company, Lowell, Mass.
- Burns, James E., IV, '05.** Ballistic Engineer and Chemist, United States Cartridge Company, Lowell, Mass.
- Burns, Richard L., VIb, '14.** Pattern Making, Foundry, Tremont & Suffolk Mills, Lowell, Mass.
- Burns, Robert H., Ia, '16.**
- Butland, Ralph A., VIIb, '13; IIb, '15.** With Washington Mills, Lawrence, Mass.
- Butler, Benjamin O., VI, '04.**
- Butler, Elizabeth M. (Barr, Mrs. John E.), IIIb, '09.** 168 Sixth Street, Lowell, Mass.
- Butterworth, Charles A., Va, '07.** Assistant Superintendent, Meritas Mills, Columbus, Ga.
- Butterworth, John A., IIb, '07.** Machinist, Tillitson Humidifier Company, Lawrence, Mass.
- Buzzell, Fred S., IIIa, '12; VIIb, '13.** Second Hand, Arlington Mills, Lawrence, Mass.
- Buzzell, William O., IIIa, '01; P. G., IIIa, '02.** Superintendent, Wamsutta Mills, New Bedford, Mass.
- Byam, Walter S., VI, '03.** Clerk, Saco-Lowell Shops, Lowell, Mass.
- Bzoski, John, Vb, '16.** Boston, Mass.
- Cady, Dennis J., V, '03.** Loomfixer, Washington Mills, Lawrence, Mass.
- Caldwell, James, VI, '15.** Machinist, M. T. Stevens & Sons Company, Andover, Mass.
- Callahan, Patrick A., VI, '04.**
- Campbell, Albert D., IIb, '00.** Section Hand, Arlington Mills, Lawrence, Mass.
- Campbell, Archibald, IV, '08.**
- Campbell, Charles F. P., IIIb, '15.** Student, Lowell High School, Lowell, Mass.
- Campbell, Edward G., VIc, '10.** Auctioneer, Real Estate and Insurance, Lowell, Mass.
- Campbell, Thomas J., IIb, '16.** Wholesale Confectioner, Lowell, Mass.
- Campling, Frank, IIb, '14.** Section Hand, Arlington Mills, Lawrence, Mass.
- Carden, Francis E., IIb, '07; IIb, '08.** Deceased.
- Carlson, Ernest B., IIb, '07.** Assistant Superintendent, Columbian Rope Company, Auburn, N. Y.
- Carlson, Goddard O., VIIb, '12.** Overseer, Stirling Mills, Lowell, Mass.
- Carman, William, Va, '09.** 585 Pleasant Street, Dracut, Mass.
- Carney, William J., Ia, '08.** Section Hand, Arlington Mills, Lawrence, Mass.
- Caron, Cleophas, Ia, '05.** 6 Pine Street, Burlington, Vt.
- Carpilio, John A., VIa, '11.** With Alfred Kimball Shoe Company, South Lawrence, Mass.
- Carruthers, Joseph, Jr., VI, '18.** Farming, with George Stevens, Lowell, Mass.
- Carter, Charles R., Vb, '03.** Sexton, Grace Church, Lawrence, Mass.

- Carty, Thomas P., Vb, '11.** Insurance Agent, Boston Mutual Life Insurance Company, Lowell, Mass.
- Casavant, Elphege H., VId, '15.** Machinist, United States Navy Yard, Boston, Mass.
- Cawthra, Albert B., IIB, '00.**
- Chadwick, Laurie, Vb, '15.** Royal Field Artillery, Bh. E. F., France.
- Charbonneau, Marie A., IIIB, '16.** Milliner, Mrs. E. Riopelle, Lowell, Mass.
- Charleton, Peter, VIa, '13.** 313 Moody Street, Lowell, Mass.
- Cheetham, James A., VIa, '16.** Overseer of Spinning, Nockege Mills, Fitchburg, Mass.
- Cheetham, John James, IIIa, '01; P. G., IIIa, '02.** Overseer, Cabot Manufacturing Company, Brunswick, Me.
- Cheetham, John Joseph, Ia, '04.** Second Hand, Massachusetts Cotton Mills, Lowell, Mass.
- Cheney, Raymond S., VIa, '17.** Traveling Salesman and Engineer, John W. Bolton & Sons, Inc., Lawrence, Mass.
- Chesworth, Frank K., Va, '09.**
- Chicken, Harold M., Ia, '16.** Cost Clerk, American Woolen Company, Lawrence, Mass.
- Chippindale, Ernest W., IIB, '01.** With Frank Parker Pile Wire Company, Lowell, Mass.
- Christenson, John O., VIb, '12.**
- Christison, Hugh, IV, '10; IVd, '11.** Chemist, Arlington Mills, Lawrence, Mass.
- Clark, John H., IVa, '14.** United States Naval Service.
- Clark, John W., IVa, '12.** Dyer, Wauskuck Company, Providence, R. I.
- Clarke, Wesley J., VId, '13.** Aeroplane Assembler, Burgess Aeroplane Company, Marblehead, Mass.
- Classon, Walter H., Vc, '13.** Second Hand, Nashua Manufacturing Company, Nashua, N. H.
- Clough, Herschel G., IVa, '16.** Third Hand, Massachusetts Cotton Mills, Lowell, Mass.
- Coburn, Elmer R., IVa, '16.** Foreman, Acadia Mills, Lawrence, Mass.
- Cochrane, John, VIb, '11; IVa, '15.** With American Radio and Research Corporation, Medford Hillside, Mass.
- Cochrane, William D., IVa, '14.** Chemist, Merrimac Chemical Company, North Woburn, Mass.
- Cockell, Frederick H., IIIa, '09.** Superintendent, College Poultry Farm, Massachusetts Agricultural College, Amherst, Mass.
- Colby, Arthur D., Ia, '00.** Assistant Superintendent, Saco-Lowell Shops, Newton Upper Falls, Mass.
- Collier, John, IIIa, '99; P. G., IIIa, '02.** Manager, John and James Dobson, Inc., Philadelphia, Pa.
- Collins, Frank, VIa, '14.** Mechanical Draftsman, Lockwood, Greene & Co., Boston, Mass.
- Collins, John A., IIa, IIB, '05.** Secretary, Mutual Boiler Insurance Company, Boston, Mass.
- Conley, Frederick A., VI, '04.** Picker Expert, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
- Conley, Leander F., IVa, '16.** Captain, Army of Occupation, A. E. F.
- Connors, Edward F., VI, '04.** Draftsman, Locks and Canals, Lowell, Mass.
- Cook, Cheney E., IIIa, '05.** Director, Eastern Leather Company, Winslow & Co., Winslow Brothers & Smith Company, Boston, Mass.

- Coolens, Julvin J., IIIa, '17. With Merrimack Manufacturing Company, Lowell, Mass.
- Coolens, Leon G., Vb, '16; Va, '17. With Merrimack Manufacturing Company, Lowell, Mass.
- Cooper, George H., Ia, '14. Chief Shipping Clerk, Vickery & Hill Publishing Company, Augusta, Me.
- Corkery, Raymond F., Va, '17. United States Military Service.
- Corr, Eben W., Vb, '08. Civil Engineer, Texas Water Works, Dallas, Tex.
- Corr, James F., Vb, '08. Loomfixer, Bay State Mills, Lowell, Mass.
- Cote, Fred J., VIa, '13. Transformer Designing, General Electric Company, Pittsfield, Mass.
- Cote, George W., Vib, '11. Electrician, United States Cartridge Company, Lowell, Mass.
- Cowdell, Herbert, V, '01. With T. Martin & Brother Manufacturing Company, Lowell, Mass.
- Cowdrey, Charles E., V, '02; Vb, '09. Overseer, Talbot Mills, North Billerica, Mass.
- Cox, Edward J., IIIa, 10; Va, '11; Ia, '13; Ia, '14; Vc, '15. Assistant Overseer, Merrimack Manufacturing Company, Lowell, Mass.
- Craven, Harry, VIIb, '08. With Pacific Mills, Lawrence, Mass.
- Crawford, Caroline W. (Mrs.), IIIb, '19. Teacher of Arts and Crafts, Lowell, Mass.
- Cremin, Daniel J., Ia, '02.
- Crompton, George E., IVa, '16. United States Military Service.
- Crompton, Henry H., II, '99. Overseer, Worsted Yarns, Pacific Mills, Lawrence, Mass.
- Cudmore, Edward T., VIId, '13. 26 Dunfey Street, Lowell, Mass.
- Cushing, Lester H., Ia, '13. Instructor in Languages, History and Economics, Lowell Textile School, Lowell, Mass.
- Custer, James J. E., V, '05. Letter Carrier, Lowell, Mass.
- Cutress, Albert J., VIId, '10. Machine Erector, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
- Dana, Clarence A., VI, '05. Mechanical Engineer, Saco-Lowell Shops, Lowell, Mass.
- Daskalakis, Efthimios Z., Vb, '12; Vc, '13. With Boott Mills, Lowell, Mass.
- Davis, Ervin, IIb, '18. With Ayer Mill, Lawrence, Mass.
- Davis, Henry, IIb, '01. Deceased.
- Davis, Prentice T., Ia, '04. Overseer, D. Mackintosh & Sons Company, Holyoke, Mass.
- Davison, Frank L., Vb, '09. Loomfixer, Talbot Mills, North Billerica, Mass.
- Dawson, Walter F., IVa, '17. Machinist, United States Cartridge Company, Lowell, Mass.
- Dean, Arthur, VIIb, '17. Overseer, United States Worsted Company, Lowell, Mass.
- Dean, Hubert R., VIb, '11. Engineer, John A. Stevens, Engineer, Lowell, Mass.
- Deely, John A., Vb, '10. 33 Wellington Avenue, Pittsfield, Mass.
- Delaney, Michael J., Vb, '11. Clerk, United States Cartridge Company, Lowell, Mass.
- Delderfield, John W., VIId, '14. United States Military Service.
- Deleu, Arthur, Vb, '17. With Wood Worsted Mills, Lawrence, Mass.
- Delmage, Edward R., IIIa, '04. With Globe Woolen Mills, Utica, N. Y.
- Dempsey, John W., IIa, '04. Photographer, Lowell, Mass.

- Desaillier, Adolphe, VIId, '16. 9 Arthur Avenue, Lowell, Mass.
- DeSpencer, John, VIb, '17. With Ayer Mills, Lawrence, Mass.
- Devine, Mary F., IVa, '13. Teacher, Public Schools, Lowell, Mass.
- Dick, Henry K., Ia, '12. Microscopist, United States Rubber Company, Textile Section, Newark, N. J.
- Dick, Hugo P., IIIa, '05; P. G., IIIa, '06; IIb, '07; Vb, '08. Designer, Merri-mack Manufacturing Company, Lowell, Mass.
- Dickson, Andrew, IIa, '06.
- Dimlick, Benjamin C., IIIa, '05; P. G., IIIa, '06. Deceased.
- Dittman, Ralph A., IIIa, '12. Died May 4, 1917.
- Dixon, Arthur, IIIa, '08. Assistant Overseer, Arlington Mills, Lawrence, Mass.
- Dobbs, William, IIb, '07; IIb, '08. Second Hand, Massachusetts Mohair Plush Company, Lowell, Mass.
- Dodge, Charles P., IIa, '07. Machinist, C. S. Dodge, Lowell, Mass.
- Dodge, Ernest W., Vb, '11.
- Dodge, Frank, Ia, '06. Overseer, Hamilton Manufacturing Company, Lowell, Mass.
- Dollbaum, John A., IIIa, '12. Died July 7, 1916.
- Donahey, William H., Vb, '12. Weaver, Conant, Houghton & Co., Incorporated, Littleton Common, Mass.
- Donahue, Michael F., VI, '04. Foreman, Saco-Lowell Shops, Lowell, Mass.
- Donahue, William E., VIb, '14. Toolmaker, United States Cartridge Company, Lowell, Mass.
- Donnellan, Frank T., IIa, '02; V, '03. Salesman, Butler Brothers, Chicago, Ill.
- Donnelly, James, Ia, '00. Deceased.
- Donovan, Daniel F., IIa, '01.
- Doole, George L., VI, '04. Clerk, United States Bunting Company, Lowell, Mass.
- Dooley, Edward W., VI, '04. In business, 175 Central Street, Lowell, Mass.
- Dowd, Martin F., IIIa, '14. Designer, United States Worsted Company, Lawrence, Mass.
- Downs, John F., VIId, '11. Machinist, Fore River Ship Building Corporation, Quincy, Mass.
- Doyle, John B., VIId, '13. With M. Doyle & Son, Lowell, Mass.
- Drescher, George J., Vb, '17. Loomfixer, George E. Kunhardt, Lawrence, Mass.
- Dubois, Ubald E., VIb, '15. Clerk, Saco-Lowell Shops, Lowell, Mass.
- Duce, Benjamin, IIIa, '06; VIIb, '07. Overseer of Weaving, Arlington Mills, Lawrence, Mass.
- Duckett, Fred I., Vb, '10. With American Woolen Company, Lawrence, Mass.
- Dudley, George E., Ia, '02. Stock and Bond Salesman, Harrington & Co., Boston, Mass.
- Duggan, Francis P., VI, '04. Store Keeper, United States Cartridge Company, Lowell, Mass.
- Duggan, John F., VIId, '19. Trucking, Duggan Auto Transfer Company, Lowell, Mass.
- Dulligan, Charles E., VIa, '09; IVa, '12. Overseer, United States Cartridge Company, Lowell, Mass.
- Dulligan, Lawrence F., VIa, '10. Foreman, United States Cartridge Company, Lowell, Mass.
- Dulligan, Thomas J., VIa, '11. Foreman, United States Cartridge Company, Lowell, Mass.
- Dumont, Gerald, IVa, '19. Invoice Clerk, Pacific Mills, Lawrence, Mass.
- Dunn, George C., IIIa, '08; IVa, '10; IVb, '13. Paymaster, Saunders Cotton Mills, Saundersville, Mass.

- Dunning, Carlos W., Vlb, '09. Second Hand, Appleton Company, Lowell, Mass.
- Durgin, Edward F., VIa, '17. Clerk, Merrimack Paper Company, Lawrence, Mass.
- Dwyer, David H., IIlb, '18. Letter Carrier, Lowell, Mass.
- Early, William E., Vlb, '15. Draftsman, United States Naval Reserve.
- Egan, Charles H., IVa, '12. Chemist, Dewey & Almy Chemical Company, North Cambridge, Mass.
- Egan, John W., Vlb, VIb, '15. Machinist, Heinze Electric Company, Lowell, Mass.
- Eichorn, Paul A., VIa, '15. With Washington Mills, Lawrence, Mass.
- Ekengren, Hilding C., IIlb, '13. Sign Painter, E. W. Dooley, Lowell, Mass.
- Eklund, Louis V., Vb, '10. With Merrimack Woolen Company, Dracut, Mass.
- Ellis, George W., VIIb, '06. Superintendent, A. D. Ellis & Sons, Monson, Mass.
- Elston, Fred. R., IIIa, '00. Superintendent, Sonnhill Worsted Company, Danielson, Conn.
- Emmons, Harry I., IVa, '14. Dyer, Washington Mills, Lawrence, Mass.
- Erbe, Gustave, VI, '05. Foreman Machinist, J. L. Thomson Manufacturing Company, Waltham, Mass.
- Evison, William A., V, '01. Loomfixer, Massachusetts Cotton Mills, Lowell, Mass.
- Eyers, John T., IV, '06.
- Fairburn, George F., IVa, '18. Assistant Chemist, Wood Worsted Mills, Lawrence, Mass.
- Faneuf, George J., Vlb, '15. United States Military Service.
- Farrell, Thomas, IIa, '01. Woolen Spinner, Stirling Mills, Lowell, Mass.
- Ferguson, Thomas, V, '02. Overseer, Suncook Mills, Suncook, N. H.
- Fernley, Bert D., Vlb, VIb, '15. With Appleton Manufacturing Company, Lowell, Mass.
- Field, Charles W., VI, '02. Carpenter and Builder, Winter Hill Station, Somerville, Mass.
- Fielding, Fred, Vc, '10. 1440 Pleasant Street, New Bedford, Mass.
- Flaherty, William, Vb, '11. With Faulkner's Mill, North Billerica, Mass.
- Flathers, George J., IVa, '16. Clerk, Merrimack Paper Company, Lawrence, Mass.
- Fleming, Carl S., Ia, '17. United States Military Service.
- Flemings, Lester A., Va, '10; Ia, '15. Died Jan. 12, 1919.
- Flint, Leon G., IIIa, '07. Cloth Examiner, George E. Kunhardt, Lawrence, Mass.
- Flynn, John L., VIb, '10. Toolmaker, Kitson Plant, Saco-Lowell Shops, Lowell, Mass.
- Flynn, John J., VI, '03. Assistant Engineer, Isolation Hospital, Lowell, Mass.
- Flynn, Patrick, Vb, '10. Deceased.
- Flynn, William J., Vb, '08. Lowell, Mass.
- Fontaine, George E., VIb, '16. With Hamilton Manufacturing Company, Lowell, Mass.
- Ford, Joseph L., IIIa, '15. Section Hand, Pacific Mills, Lawrence, Mass.
- Forrest, Fred G., IIa, '02.
- Forrest, William R., VIb, '13. With F. M. Bill & Co., Lowell, Mass.
- Fortier, Alderic W., Va, '17. With Boott Cotton Mills, Lowell, Mass.
- Fortune, David A., IIb, '02. Overseer, Lower Pacific Mills, Lawrence, Mass.
- Foster, Sherwood L., Ia, '05. Lowell, Mass.

- Fournier, Albert A., Ia, '11.** Superintendent of Carding and Spinning, Renfrew Manufacturing Company, Adams, Mass.
- Frame, William, V, '01.** Overseer, Johnson & Johnson, New Brunswick, N. J.
- Frank, Emil M., IIIa, '04; P. G., IIIa, '06.** Loomfixer, Arlington Mills, Lawrence, Mass.
- Frechette, Alphonse J., IIB, '07.** Clerk, O. Ouellett, Lawrence, Mass.
- Freeman, George D., VID, '13.** With United States Cartridge Company, Lowell, Mass.
- Freeman, Ralph W., IVa, '12; IVb, '14; Vb, '19.** Ammunition Tester, United States Cartridge Company, Lowell, Mass.
- French, Ernest J., Ia, '05.** Farm Superintendent, Bucking Burro Farm, Cornish, N. H.
- French, George W., Jr., IIIa, '15.** Mechanical Engineer, Beaver Manufacturing Company, Andover, Mass.
- French, Harold E., Vb, '18.** Spare Loomfixer, Arlington Mills, Lawrence, Mass.
- French, Mrs. Irving (Martha Balmforth).**
- French, Raymond C., Vb, '17.** Machinist, Boston Navy Yard, Boston, Mass.
- French, Walter B., VIa, '16.** Assistant Master Mechanic, Boott Cotton Mills, Lowell, Mass.
- Fritz, Carl C., VIIb, '17.** With Weiner's Fur Store, Lawrence, Mass.
- Frothingham, Newton S., Ia, '12.**
- Fujiyoshi, Heisayu, Ia, '10; Va, '11.** Died April 19, 1915.
- Fuller, Edwin M., Ia, '15.** Assistant Manager, Waterhead Mills, Inc., Lowell, Mass.
- Fulton, John McC., V, '06.** Lowell, Mass.
- Funnell, James C., Va, '17.** Boston, Mass.
- Gagan, John H., V, '01.** With Clinton Woolen Company, Clinton, Mich.
- Gagnon, Arthur C., VID, '15.** Salesman, George's Shoe Store, Lowell, Mass.
- Gakidis, Alexander N., IVa, '11.** Proprietor of Drug Store, Manchester, N. H.
- Gallagher, Edward J., Va, '16.** Clerk, Universal Winding Company, Boston, Mass.
- Galle, Carl W., VIb, '16.** Draftsman, Navy Yard, Boston, Mass.
- Garner, William, IIIa, '03.** With Ginn & Co., Cambridge, Mass.
- Garrity, Joseph F., VID, '11.** Machinist, United States Cartridge Company, Lowell, Mass.
- Garrity, Peter F., Va, '15.** With Merrimack Manufacturing Company, Lowell, Mass.
- Gaspar, Edith E., IIIB, '10.** Clerk, Lawrence Manufacturing Company, Lowell, Mass.
- Gaudette, Eugene O., VIa, '16.** Field Clerk, United States Army, A. E. F., France.
- Gaulin, Achille G., VIb, '16; VID, '18.** Draftsman, United States Cartridge Company, Lowell, Mass.
- Gaunt, Alfred C., IIIa, '99; P. G., IIIa, '02; IIa, '03; IIB, '04.** Manager, Merrimack Mills, Methuen, Mass.
- Gaunt, Ernest H., IIIa, '09.** Organization Engineer and Counselor, Providence, R. I.
- Gauthier, William, Vb, '10.** Died October, 1915.
- Gay, Earle B., Ia, '05.**
- Geaney, James H., VIIb, '15.** Overseer, Brightwood Manufacturing Company, North Andover, Mass.
- Gearin, John W., VIb, '15.** 44 Worthen Street, Lowell, Mass.

- Gerry, Churchill, VIa, '15; IVa, '16. Switchboard Installer, New England Telephone & Telegraph Company, Lowell, Mass.
- Gervais, Armand S., VIId, '18. Machinist, Moody Bridge Garage, Lowell, Mass.
- Gesing, Roland M., VIIb, '16. With Brightwood Manufacturing Company, North Andover, Mass.
- Gibbons, James J., VIa, '14. Optometrist, J. A. Bacon, M.D., Lawrence, Mass.
- Giffin, Charles H., IIIa, '13; VIIb, '14. Overseer, Skowhegan Woolen Company, Wilton, N. H.
- Giffin, George R., IIIa, '13; VIIb, '14. Overseer, Somerset Manufacturing Company, Raritan, N. J.
- Gile, Harold E., IVa, '13; IVb, '16. Chemist, Diamond Match Company, Lawrence, Mass.
- Gilinson, Philip J., VIa, '09. Experimental Work, Heinze Electric Company, Lowell, Mass.
- Gill, Gardner G., IVa, '14. Traveling Salesman, W. A. Lippincott Company, Boston, Mass.
- Gillespie, James E., VIIb, '07. With Ayer Mills, Lawrence, Mass.
- Gilley, Frederic S., IIIa, '16; IIb, '17. With American Woolen Company, Boston, Mass.
- Gilman, Edward T., VIa, '14. Master Mechanic, Boott Mills, Lowell, Mass.
- Glennon, Edward M., IVa, '11. Overseer of Mercerizing, Horne Bleach and Dye Works, Pawtucket, R. I.
- Goddard, Harold W., Vlb, '15. Died Aug. 31, 1915.
- Goddard, Walter L., VIIb, '15. United States Military Service.
- Good, Henry, Ia, '02. Providence, R. I.
- Goodchild, George, Ia, '03; VI, '05. Draftsman, Saco-Lowell Shops, Lowell, Mass.
- Goodwin, Ross, Vb, '11. With Bay State Mills, Lowell, Mass.
- Gookin, Alice L. (Murphy, Mrs.), IIIb, '10. 426 Irving Street, Northwest, Washington, D. C.
- Gordon, Herbert E., IIIa, '09. Clerk, Arlington Mills, Lawrence, Mass.
- Gordon, Loyd H., VIa, '13. Machinist, James F. Gordon Machine Shop, Lowell, Mass.
- Grant, Archibald, IIb, '01. Lowell, Mass.
- Graves, John F., Vlb, '12. Surveyor Draftsman, Smith & Brooks, Lowell, Mass.
- Gray, Finley M., VI, '03. Clerk, Quartermaster's Department, Boston, Mass.
- Greenhalge, James, Vc, '08. Overseer, Jackson Manufacturing Company, Nashua, N. H.
- Greenwood, Ralph F., VIIb, '12. Manager, Stafford Mills, Central Falls, R. I.
- Greenwood, William, Vlb, '18. Mechanical Draftsman, United States Cart-ridge Company, Lowell, Mass.
- Gregson, Robert B., Va, '06; Ia, Vc, '07. Assistant Superintendent, Spencer Lens Company, Buffalo, N. Y.
- Grimes, Henry D., IVa, '17; IVd, '19. Assistant Chemist, Washington Mills, Lawrence, Mass.
- Grouke, Michael, IIb, '01. Lowell, Mass.
- Guenard, Julia A., IIIb, '16. Saleswoman, Manchester Dry Goods Company, Manchester, N. H.
- Gunning, Alfred J., VIIb, '16. Wool Buyer, Adams & Leland, Boston, Mass.
- Gunther, George A., IVa, '16. Assistant Dyer, Merrimack Woolen Corporation, Dracut, Mass.
- Gustafson, Alfred L., IVa, '11; VIa, '15. Steamfitter, Buerkel & Co., Inc., Boston, Mass.

- Haartz, John C., VIIb, '07.** President and Treasurer, J. C. Haartz, Inc., Boston, Mass.
- Haas, Ignatius, Ia, '07.**
- Haigh, Walter, IIIa, '02.**
- Haigh, William, Vb, '06.**
- Haithwaite, Albert, Ia, '14.** Mill Department Head, Catlin & Co., New York City.
- Haithwaite, George Q. R., Va, '16.** Superintendent, Appleton Company, Lowell, Mass.
- Haldane, Andrew, Va, '14.** Second Hand, Pacific Mills, Lawrence, Mass.
- Hale, Frank O., Ia, '15.** Died Jan. 30, 1917.
- Hall, Richard G., Ia, '15.** 48 Maple Street, New Bedford, Mass.
- Hall, Sydney H., VIb, '14.** Assistant Manager, John Dennis Machine Company, Lowell, Mass.
- Hall, William H., Jr., IIIa, '17.** Inspector, Ordnance Department, Bridgeport, Conn.
- Hallbauer, William R., Vb, '08.** Lawrence, Mass.
- Halloran, Joseph M., IVa, '15.** Salesman, Toledo Scale Company, Boston, Mass.
- Hamblett, Harry A., Ia, '07.** Overseer, Merrimack Manufacturing Company, Lowell, Mass.
- Hamilton, William G., IIIa, '18.** Assistant Overseer of Weaving, Washington Mills, Lawrence, Mass.
- Hammond, John N., Vb, '14.** Second Hand, Sutton's Mills, North Andover, Mass.
- Handley, John M., Vb, '11.** 15 Woodward Avenue, Lowell, Mass.
- Hanglin, Albert J., IV, '07.**
- Hanglin, William E., Vb, '07.**
- Hanley, Edward T., IIb, '15.** Assistant Manager, Abbot Worsted Company, Forge Village, Mass.
- Hannagan, Edward F., IIb, '13; VIIb, '14.** Second Hand, Washington Mills, Lawrence, Mass.
- Hansen, Hans M., Vld, '12.** Foreman, United States Cartridge Company, Lowell, Mass.
- Hanslip, Charles W., Vb, '11.**
- Hanson, Edward, IIIa, '08; P. G., IIIa, '09; Ia, '13.** Overseer, Lowell Bleachery, Lowell, Mass.
- Hanson, Winfield S., IVa, '14.** Bank Clerk, Beacon Trust Company, Boston, Mass.
- Harder, Elmer E., VI, '05.** Janitor, Charles W. Morey School, Lowell, Mass.
- Hardman, David B., IV, '08.** Machine Printer, Lowell, Mass.
- Hardy, Harry D., IVa, '18.** In dye house, Nashua Manufacturing Company, Nashua, N. H.
- Harris, Louis, VIIb, '08.** Clothing Designer, J. Peavey & Brothers, Boston, Mass.
- Hartshorn, George T., VIIb, '12.** Merchant, Hartshorn's Market, Norwood, Mass.
- Hartwell, Henry E., VI, '06.** Doctor, Lawrence, Mass.
- Hartwell, Marcus H., Ia, Va, '11.** Overseer, United States Cartridge Company, Lowell, Mass.
- Hartwig, Albert E., Vb, '14.** Student, Wentworth Institute, Boston, Mass.
- Hashmatian, Harry, IIIb, '15.** Tailor, Sigmund Eisner Company, Red Bank, N. J.

- Haven, George W., IIIa, '05.** Of Blake & Stearns, Boston, Mass.
- Haworth, Joseph, VI, '02.** Traveling Mechanical Engineer, C. G. Sargent's Sons Corporation, Graniteville, Mass.
- Hayes, Michael C., IIa, '09.** In business, North Billerica, Mass.
- Hayward, Harry J., Ia, '16; Ia, '17.** With United States Rubber Company, Newark, N. J.
- Healy, Andrew J., VIId, '15.** Machinist, United States Cartridge Company, Lowell, Mass.
- Heaton, Forster G., IV, '11.** Died December, 1914.
- Hebert, Charles L. J., IV, '07.** Fixer, United States Cartridge Company, Lowell, Mass.
- Heeley, George E., Va, '16.** Second Hand, Tremont & Suffolk Mills, Lowell, Mass.
- Hempel, Frank, V, '04.** Stock Clerk, Western Electric Company, Boston, Mass.
- Henderson, George R., IVa, '15.** Navy Aero Service.
- Hendricks, Thomas A., VIIb, '16.** Machinist, United States Cartridge Company, Lowell, Mass.
- Hennessey, Ambrose M., VIIb, '08.** Inspector of Transformers, General Electric Company, Pittsfield, Mass.
- Henzie, John J., IIIa, '14.** Watchman and Inspector, Quartermaster's Corps, Boston, Mass.
- Herbst, Gustav F., Va, '14.** Mount Vernon, N. Y.
- Hering, Paul C., IIIa, '10.** Loomfixer, Wood Worsted Mills, Lawrence, Mass.
- Herrick, Robert F., Jr., Ia, '17.** With Saco-Lowell Shops, Boston, Mass.
- Herrick, William E., VIIb, '11.** Superintendent, Felt Mill, Bates & Innes, Carleton Place, Ont.
- Herron, Alexander T., Ia, '13; IVa, '14; IVb, '17.** Second Hand, Dyeing, Acadia Mills, Lawrence, Mass.
- Hibbert, George E., Va, '10; Vc, '11; Vb, '12; IIIa, '17.** Loomfixer, Hamilton Manufacturing Company, Lowell, Mass.
- Higginbottom, Harold J., IVa, '15.** With Lower Pacific Mills, Lawrence, Mass.
- Higginbottom, Joseph J., VIId, '16; VIa, '18.** Assistant Paymaster, Boott Mills, Lowell, Mass.
- Higgins, Alfred, IIIa, '13.** Designer, Lorraine Manufacturing Company, Pawtucket, R. I.
- Higgins, James A., IIa, '03; IIa, IIb, '04.**
- Higgins, William, IVa, '18.** Student, Tilton Seminary, Tilton, N. H.
- Higginson, Joseph H., IIIa, '12.** Superintendent, Marland Mills, Andover, Mass.
- High, Reynold G., IVa, '19.** Apprentice Dyer, Pacific Mills Print Works, Lawrence, Mass.
- Hill, Bruce, IIIa, '14.** Loomfixer, Arlington Mills, Lawrence, Mass.
- Hill, Daniel, IIb, '01.** Overseer, Passaic Worsted Spinning Company, Passaic, N. J.
- Hill, Ellsworth O. C., IIb, '10.** Superintendent, Highland Worsted Mill, Camden, N. J.
- Hill, Harold, Ia, '08; Va, '09.** Section Hand, Arlington Mills, Lawrence, Mass.
- Hill, Paul, VIIb, '14.** With Wood Worsted Mills, Lawrence, Mass.
- Hilliard, William B., VIa, '10.** Machinist, Boston & Maine Railroad, North Billerica, Mass.
- Hillier, Arthur P., IIb, '09.** Night Superintendent, Silesia Worsted Mills, North Chelmsford, Mass.
- Hills, William, Va, '18.** Clerk, Wellington, Sears & Co., Boston, Mass.

- Hird, Arthur W., Ia, '10.** Overseer, Lawrence Manufacturing Company, Lowell, Mass.
- Hird, James A., IVa, '10.**
- Hitchcock, Thomas B., Ia, IIa, IIIa, '01.** President, Trans-ocean Mercantile Company, Inc., Boston, Mass.
- Hitchen, Harry S., Vb, '07.**
- Hitchen, Thomas G., Vb, '07.**
- Hodge, William, VIa, '11.** Accountant, Patterson, Teele & Dennis, Boston, Mass.
- Hodgkins, Albert A., VIIb, '09; IIIa, '10.** Superintendent of Narrow Fabrics, American Fabrics Company, Bridgeport, Conn.
- Hodgkins, Richard D., Ia, '16.** With Saco-Lowell Shops, Lowell, Mass.
- Hoellrich, Martin J., Vb, '08; Vc, '10.** Instructor of Weaving, Lowell Textile School, Lowell, Mass.
- Hoelzel, Louis C., VIa, '13.** Loomfixer, Arlington Mills, Lawrence, Mass.
- Hoessler, Carl, IIIa, '06.** Overseer of Weaving, M. T. Stevens & Sons, North Andover, Mass.
- Hogan, James A., V, '02.** Hogan's Market, Lowell, Mass.
- Holgate, Charles H., IIa, '01.** With A. R. Andrews Company, Boston, Mass.
- Holland, Walter F., IIIa, '12.** Loomfixer, Washington Mills, Lawrence, Mass.
- Holt, Gavin O., IVa, '10.**
- Holt, Harry C., VIa, '09.**
- Hope, George E., VID, '19.** Machinist, Lamson Company, Lowell, Mass.
- Horman, Charles P., IIIa, '14.** Loomfixer, North Billerica Manufacturing Company, North Billerica, Mass.
- Houston, William I., IIIa, '09; Vb, '10.**
- Howard, John, V, '00; IIIa, '03; IIa, '06; VIIb, '07.** With Imperial Mills, Darby, Pa.
- Howard, Thomas, V, '05.** Overseer, T. Martin & Brother Manufacturing Company, Lowell, Mass.
- Howe, Charles W., VID, '14.** General Foreman, Saco-Lowell Shops, Lowell, Mass.
- Howell, Edward A., Va, '09.** Loomfixer, Pemberton Mills, Lawrence, Mass.
- Howker, John, Ia, '13; Va, '14; IIIa, '17; Ia, '18.** United States Military Service, France.
- Hoyle, Edward, IIB, '02.**
- Hoyle, Joseph, IIB, '04.** Overseer, United States Worsted Company, North Chelmsford, Mass.
- Hunt, Herbert R., VI, '05.**
- Hunter, Ralph, IIIa, '01; V, '03.** Of Hall, Hartwell & Co., Troy, N. Y.
- Hunton, John H., VIIb, '10.** Treasurer and General Manager, Newichawanick Company, South Berwick, Me.
- Hunton, Lewis G., IV, '05.**
- Hurtado, Leopoldo, Jr., Vc, '10.** General Manager, Hurtado & Co., Uruapan, Michoacan, Mex.
- Huse, Charles H., VIIb, '14.** Warrant Machinist, United States Navy.
- Hutchings, James C., VIIb, '12.** Foreman, Lower Pacific Mills, Lawrence, Mass.
- Hutton, Clarence, V, '00.** Editor, "Textile World Journal," Boston, Mass.
- Hutton, Harold, V, '06.**
- Hutton, John M., Vb, '06.**
- Hutton, Thomas V., Vb, '10.** Electrician, W. C. Hinckley, Lowell, Mass.

- Ignatius, Pentti, Va, '07.** Finland.
Isley, Lilla C. (Mrs.), IIb, '19. Teacher of Arts and Crafts, Lowell, Mass.
Inberg, Magnus, Ia, '06. Finland.
Ingham, Benjamin W., Ia, '08. Machinist, United States Cartridge Company, Lowell, Mass.
Ingle, Ernest, Va, '16. Third Hand, Massachusetts Cotton Mills, Lowell, Mass.
Innes, Andrew K., Vb, '13. Second Hand, Arlington Mills, Lawrence, Mass.
Innes, Archibald K., IVa, '17. Second Hand, Arlington Mills, Lawrence, Mass.

Jackson, Charles F., VIb, '15. United States Military Service.
Jackson, Frank, VIb, '10; VIId, '12. Section Hand, Monomac Spinning Company, Lawrence, Mass.
Jackson, Walter J., IIa, '13; Vb, '14; IIIa, VIIb, '15. Assistant Superintendent, Sutton's Mills, North Andover, Mass.
Jarvis, Charles, Vb, '13.
Jasper, Grant, Vc, '12. Farmer, Mapleside Poultry Farm, Hudson, N. H.
Jean, Adhemard C., VIa, '10. United States Military Service.
Jeanotte, Arthur, VI, '04. Machinist, Saco-Lowell Shops, Lowell, Mass.
Jennings, James J., IIIa, '03. Overseer of Weaving, Jenckes Spinning Company, Pawtucket, R. I.
Jepson, Harry, Vb, '07.
Johnson, Arthur O., IVa, '14. United States Military Service.
Johnson, Ernest A., IIa, IIb, '02; V, '06. Assistant Agent, Washington Mills, Lawrence, Mass.
Johnson, Milton E., IVa, '19. Apprentice Dyer, Ayer Mills, Lawrence, Mass.
Johnson, Samuel L., V, '03. Overseer of Weaving, Walworth Brothers, Inc., Lawrence, Mass.
Jones, Herbert, Ia, '13. Assistant Superintendent, Goodyear Cotton Mills, Inc., Killingly, Conn.
Jones, William J., IIb, '00; IIa, '01. Overseer, Worsted Spinning, United States Bunting Company, Lowell, Mass.
Jordan, Frederic W., IV, '10. With John A. Stevens, Engineer, Lowell, Mass.
Jorde, Linville T., VIc, '10. Manager, Co-operative Grocery Stores Company, Dover, N. H.
Joyce, John, Vc, '09.
Jubenville, Joseph D., VIId, '16. 107 Salem Street, Lowell, Mass.

Kaler, Harold F., VIb, '09. Assistant Foreman, General Electric Company, West Lynn, Mass.
Kannheiser, Frank J., IVa, '17. Drug Room Clerk, Pacific Print Works, Lawrence, Mass.
Kannheiser, William A., Vb, '15. With Arlington Mills, Lawrence, Mass.
Kearney, Thomas K., Ia, '17; Ia, '18. With Massachusetts Cotton Mills, Lowell, Mass.
Keisling, William, Vb, '16. United States Military Service.
Keleher, John J., IIb, '03. Overseer, Champlain Mills, Winooski, Vt.
Keleher, John L., VIId, '15. 17 Cranes Avenue, Lowell, Mass.
Kellett, Harold I., IIIa, '18. Assistant in Designing Office, Wood Worsted Mills, Lawrence, Mass.
Kellett, Irvine, II, '99. Second Hand, Worsted Yarns, Pacific Mills, Lawrence, Mass.
Kelley, Bernard J., Jr., VIc, '09. United States Military Service.

- Kelly, Michael H., Ia, '02; IIIa, '07.** Overseer, Appleton Company, Lowell, Mass.
- Kelly, Thomas F., IVa, '15.** Textile Chemist and Colorist, Merrimack Manufacturing Company, Lowell, Mass.
- Kennedy, Leo J., IVa, '17.** Assistant Chemist, Lowell Gas Light Company, Lowell, Mass.
- Kennedy, William E., VIa, '11.** United States Military Service.
- Kenney, Raymond J., IVa, '17.** Assistant Chief Deputy, Massachusetts Department of Fisheries and Game, Boston, Mass.
- Kent, Arthur, VIb, '12; VIc, '14.** Died August, 1914.
- Kent, Ernest J., IId, '02.** Section Hand, English Drawing, Lower Pacific Mills, Lawrence, Mass.
- Kenworthy, Joseph, Ia, '05.** Died in 1916.
- Kenyon, Herbert, Ia, '15.** With Saco-Lowell Shops, Lowell, Mass.
- Kerrigan, Arthur J., VIa, '12.** Electrical Engineer, General Electric Company, Schenectady, N. Y.
- Kershaw, Benn, Va, '09; Vc, '10.** Textile Instructor, State Trade School, Putnam, Conn.
- Kershaw, Samuel S., IId, '10; Vb, '13.** Overseer, Silesia Worsted Mills, North Chelmsford, Mass.
- Kershaw, William E., V, '04.** Collector, Lowell Gas Light Company, Lowell, Mass.
- Kidd, Thomas E., IV, '06.** Overseer of Dyeing, Niantic Manufacturing Company, East Lyme, Conn.
- Kiessling, Robert H., Ia, '17.** United States Military Service.
- Killerby, Walter, IId, '01.** Overseer, Park Worsted Mills, Lowell, Mass.
- Kimball, Irving D., VI, '05.** Cost Department, Saco-Lowell Shops, Lowell, Mass.
- Kirkpatrick, Lloyd A., Ia, '13; Ia, '14.** Traveling Representative, Wonalancet Company, Boston, Mass.
- Kirsch, Alfred O., Vb, '07.** Loomfixer, Wood Worsted Mills, Lawrence, Mass.
- Kitchen, Walter G., Ib, '17.** Second Hand, Faith Knitting Company, Averill Park, N. Y.
- Knowles, Frank E., Ia, '03.** Superintendent, Inspection Department, Factory Mutual Insurance Company, Boston, Mass.
- Krause, George R., VIIb, '10.**
- Kyle, George S., Ia, '15.** Manager, Shipping and Yarn Department, Muscogee Manufacturing Company, Columbus, Ga.
- Labatte, Philomena U., IIId, '18.** Blue Print Clerk, Lamson Company, Lowell, Mass.
- Lachance, Melina (Payette, Mrs. Wilfred), IIIb, '11.** 98 Blaisdell Street, Haverhill, Mass.
- Laffert, August W., IIIa, '06; VIIb, '07.** Loomfixer, Wood Worsted Mills, Lawrence, Mass.
- Lagerblad, Jarl, VIIb, '08.** Finland.
- LaJeunesse, Joseph A., IVa, '10; IVc, '13.** Woodworker, Primo Company, Montreal, Can.
- Lake, William F., IIIa, '07; P. G., IIIa, '08.** Assistant Superintendent, Berkshire Woolen Company, Pittsfield, Mass.
- Lambert, Mrs. Arthur (Laporte, Mary Elsie).**
- Lambert, Harry, IId, '12; Vb, '15.** Section Hand, Pacific Mills, Lawrence, Mass.

- Lambert, Seth, I Ib, '13.** Section Hand, Arlington Mills, Lawrence, Mass.
- Lamont, Walter M., I Ib, '02.** Agent, Wood Worsted Mills, Lawrence, Mass.
- Lamson, George F., VI, '05.** With Morton Company, Worcester, Mass.
- Lane, Lewis D., Vid, '16.** Machinist, Davis & Furber Machine Company, North Andover, Mass.
- Lane, Michael J., VIIb, '15.** 17 Annis Street, Methuen, Mass.
- Lang, William A., Vc, '13.** With Lockwood, Greene & Co., Boston, Mass.
- Langevin, Felix D., VI, '04.** Assistant Superintendent, Kitson Division, Saco-Lowell Shops, Lowell, Mass.
- Langevin, George F., VIb, '15; VIa, '17.** United States Military Service.
- Langford, Frederick T., VIIb, '17.** Assistant Dyer, Ayer Mills, Lawrence, Mass.
- Lapierre, Alderic S., IIIa, '12.** Insurance Agent, Prudential Life Insurance Company, Lowell, Mass.
- Laporte, Mary E. (Lambert, Mrs. Arthur), IIIb, '16.** 32 Dracut Street, Lowell, Mass.
- LaPorte, Philip J., IVa, '12.** Chemist, Lowell Gas Light Company, Lowell, Mass.
- LaPorte, Wilfred S., Vid, '19.** Mechanical Draftsman, Lamson Company, Lowell, Mass.
- LaPrise, Frank E., IVa, '14.** Overseer of Dyeing, Mianus Manufacturing Company, Coscob, Conn.
- Larkin, Mrs. Joseph P. (Phelps, Mary Isabella).**
- Larue, Isabella G., IIb, '16.** With Lawrence Manufacturing Company, Lowell, Mass.
- Laurin, Erick T. L., VIb, '14.** 40 Lundberg Street, Lowell, Mass.
- Lavigne, André J., VIb, '17.** Assistant Engineer, City Hall, Lowell, Mass.
- Law, Alfred, I Ib, '01.** Overseer, Arlington Mills, Lawrence, Mass.
- Lawliss, Augustine J., V, '02.** Deceased.
- Lawrence, Abbott, Vid, '16.** Machinist, Bay State Street Railway Company, Lowell, Mass.
- Lawrence, Charles, Ia, '03.**
- Laycock, Berry, VIIb, '17.** Agent, Scotia Worsted Mills, Woonsocket, R. I.
- Leach, Joseph W., V, '03.** Designer, Pacific Mills, Lawrence, Mass.
- Learned, Frank E., Va, '13; Vc, '14.** United States Military Service.
- Leary, John F., Vid, '19.** 118 Mount Washington Street, Lowell, Mass.
- Leather, Seward S., I Ib, '15.** United States Military Service.
- Leaver, Frederick W., Ia, '17.** Assistant Superintendent, Pacific Mills, Lawrence, Mass.
- Leaver, Harold E., I Ib, '14.** Textile Inspector, Quartermaster's Department, Lowell, Mass.
- Leaver, Harry, IVa, '16.** Assistant Dyer, Arlington Mills, Lawrence, Mass.
- Leaver, Raymond J., VIb, '13.** United States Military Service.
- Leck, Arthur J., VIIb, '10.** Bureau of the Census, Manufacturing Division, Department of Commerce, Washington, D. C.
- Ledoux, Blanche H., IIIb, '10.** Died March 10, 1919.
- Lee, Charles, Ia, '02.** Machinist, Saco-Lowell Shops, Lowell, Mass.
- Lees, William H., IIIa, '15.** Manufacturer, Lowell Narrow Fabric Company, Lowell, Mass.
- Leith, Edwin E., IIIa, '02.** Assistant Superintendent, S. Slater & Sons, Inc., Webster, Mass.
- Leith, Joseph E., Vb, '12; IIIa, '14.** Second Hand, Jackson Mills, Nashua, N. H.
- Leland, Raymond C., VIb, '15.** United States Military Service.

- Lemire, Arthur, Ia, '10; Va, '11.
- Leonard, Charles W., VIIb, '13; IVb, '15. Chemist, Kalle & Co., New York City.
- Lewis, Charles S., VIa, '14. Fireman, Silesia Worsted Mills, North Chelmsford, Mass.
- Libby, C. Robert, VI, '02.
- Lightbown, William H., Vb, '15. Fixer, Silesia Worsted Mills, North Chelmsford, Mass.
- Linberg, Joseph F., IVa, '11. Of J. F. Linberg Company, Richmond Hill, N. Y.
- Lincourt, Hector L., VI, '03. Lynn, Mass.
- Lincourt, Henry E., VIb, '09.
- Linehan, Thomas W., VIIb, '14. Textile Inspector, Quartermaster's Department, Lawrence, Mass.
- Linkletter, Alfred C., VI, '05. With International Steel and Ordnance Company, Lowell, Mass.
- Lister, Henry, VIIb, '15. Cloth Examiner, Wood Worsted Mills, Lawrence, Mass.
- Lockberg, John L., VIId, '12. Machinist, Saco-Lowell Shops, Lowell, Mass.
- Logan, George H. S., IV, '11.
- Logan, Robert F., Va, '15; IIIa, '18. Second Hand, Pemberton Mills, Lawrence, Mass.
- Looby, George A., Vc, '14. Clerk, United States Government, Panama Canal.
- Lord, Harry D., IIIa, '04. Selling Agent, Saco-Lowell Shops, Boston, Mass.
- Lord, Wilfred, IIIa, '01; IIb, '03; IIa, '04. Assistant Superintendent, Worsted Department, Pacific Mills, Lawrence, Mass.
- Lorigan, Charles J., VIId, '18. Machinist, Bethlehem Ship Building Corporation, Quincy Point, Mass.
- Loupret, George J., IVa, '17. With Heinze Electric Company, Lowell, Mass.
- Lovell, Charles E., VI, '05. Los Angeles, Cal.
- Lowe, Harry F., Va, '13; Vb, '14. United States Military Service.
- Lowe, John C., IIb, '12; Vb, '16. Instructor, Wool Department, Lowell Textile School, Lowell, Mass.
- Lowell, Walter D., IVa, '18. Laboratory Assistant, Arlington Mills, Lawrence, Mass.
- Lowney, May E. P., VIa, '17. Assistant Director, Vocational Training Division, Massachusetts Industrial Accident Board, Boston, Mass.
- Luce, Harry A., VIIb, '14; IIIa, '15. In Sample Department, United States Worsted Company, Lawrence, Mass.
- Lunan, Karl S., VIa, '16. Assistant Master Mechanic, Massachusetts Cotton Mills, Lowell, Mass.
- Lund, Stanley W., VIb, '16. Mechanical Draftsman, Davis & Furber Machine Company, North Andover, Mass.
- Lutz, Alwin, VIa, '17. Designing Draftsman, Lawrence Machine Company, Lawrence, Mass.
- Lutz, Leo A., Vb, '17. With Wood Worsted Mills, Lawrence, Mass.
- Lutz, Paul P., Vb, '17. Section Hand, Pacific Mills, Lawrence, Mass.
- Lynch, John, VIId, '16. Foreman, McGraw Tire and Rubber Company, East Palestine, Ohio.
- McAlister, John W., V, '99. Deceased.
- McAuliffe, Patrick D., VIb, '10. Glazier, Lowell, Mass.
- McBride, Robert G., IIa, '04.
- McCann, James J., Vb, '17. With Pacific Mills, Lawrence, Mass.

- McCann, Martin, Vb, '12.**
- McCarthy, Joseph F., IIIa, '06.** Cloth Examiner, Wood Worsted Mills, Lawrence, Mass.
- McCartin, Marietta L., IIIa, '15.** Clerk, United States Bunting Company, Lowell, Mass.
- McClure, Charles G., VIb, '09.** Machinist, The Lamson Company, Lowell, Mass.
- McCoombs, Alton H., VIb, '19.** Machinist, Fred Brooks Company, Lowell, Mass.
- McDermott, James, VIIb, '16.** Cloth Examiner, United States Worsted Company, Lawrence, Mass.
- McDermott, Thomas R., IVa, '17.** United States Military Service.
- Macdonald, Chester W., VIa, '12.** Department Head, Practical Electricity, Lowell Vocational School, Lowell, Mass.
- MacDonald, John F., Va, '14.** Clerk, Boott Mills, Boston, Mass.
- McDonald, William A., VIb, '13.** Machinist, Saco-Lowell Shops, Lowell, Mass.
- McElroy, Claude R., Vid, '14.** United States Navy.
- McElroy, Samuel H., Vb, '10.** With Heinze Electric Company, Lowell, Mass.
- McGaunn, Charles, Vid, '15.** Toolmaker, United States Cartridge Company, Lowell, Mass.
- McGaunn, Theodore, Vid, '15.** Machinist, United States Navy Yard, Boston, Mass.
- McGee, David, IVa, '15.** Died January, 1918.
- MacGeoch, James A., IIIa, '17.** Clerk, Treat Hardware and Supply Company, Lawrence, Mass.
- McGill, Charles F., IIIa, '18.** Overseer of Finishing, Brookfield Woolen Company, Lowell, Mass.
- McGill, Francis J., VIIb, '17.** Assistant Dyer, Newport Mills, Newport, Me.
- McGill, William E., VIIb, '08.**
- McGovern, James, VIIb, '08.** Died April 24, 1911.
- McGowan, Annie C., IIIb, '13.** With Lowell Hosiery Company, Lowell, Mass.
- McGrath, William F., VIIb, '15.** Cloth Examiner, Wood Worsted Mills, Lawrence, Mass.
- McGurn, James P., Vid, '13.** Machinist, United States Cartridge Company, Lowell, Mass.
- McKenna, Jeremiah J., Vb, '08.** With Merrimack Woolen Company, Dracut, Mass.
- McKittrick, Percy A., VIa, '16.** Assistant Treasurer, Parks-Cramer Company, Fitchburg, Mass.
- McLaughlin, Peter J., Ia, '06.** Second Hand, Massachusetts Cotton Mills, Lowell, Mass.
- McLay, John, Vb, '06; IIb, '09.** Superintendent, Worsted Mill, Globe Mills, Utica, N. Y.
- McManus, Hugh, V, '05.**
- McNabb, Alice M., IIIb, '17.** With Tremont & Suffolk Mills, Lowell, Mass.
- McNamara, Thomas, Vb, '11.** With Merrimack Manufacturing Company, Lowell, Mass.
- McQuade, Hugh B., V, '01.** With United States Cartridge Company, Lowell, Mass.
- McVickar, William H., VIIa, '18.** Overseer of Finishing, Edwards Manufacturing Company, Augusta, Me.
- Mabbett, Albert L., IIIa, '10.** Superintendent, Newport Woolen Company, Newport, Me.

- Mack, Clarence P., IIIa, '14.** With American Woolen Company, Skowhegan, Me.
- Macnee, Forrest F., IIB, '14.** Styler and Salesman, George E. Kunhardt Corporation, New York City.
- Madden, Peter, Va, '09.** In business, Lowell, Mass.
- Maden, Harry, IIB, '00.**
- Magee, William J., IVa, '17.** Assistant Chemist, State Department of Health, Lawrence, Mass.
- Maguire, Andrew F., Vb, '13.** With Saco-Lowell Shops, Lowell, Mass.
- Maguire, James H., VI, '05; Ia, '06; IIB, '15.** General Foreman, Saco-Lowell Shops, Lowell, Mass.
- Mahoney, Dennis J., Vb, '09.** Postal Clerk, North Billerica, Mass.
- Mahoney, Joseph, Vc, '14.** Loomfixer, Bigelow-Hartford Carpet Company, Thompsonville, Conn.
- Maker, Isaac A., Ia, '08.** Draftsman, Lawrence Manufacturing Company, Lowell, Mass.
- Manning, James B., IVa, '11; IVb, '13.** Chemist and Dyer, Felters Company, Inc., Millbury, Mass.
- Marjerison, Isaiah D., II, '99.** Overseer, Worsted Combing, Pacific Mills, Lawrence, Mass.
- Marjerison, T. Sydney, IIIa, '07; P. G., IIIa, '08.** Poultry Farmer, Salem, N. H.
- Markham, Ralph W., IVa, '18.** Assistant Chemist, United States Cartridge Company, Lowell, Mass.
- Marsden, Fred, IIIa, '15.** Accountant, Katama Mills, Lawrence, Mass.
- Marsden, Phillips B., IVa, '11.** Superintendent, Howard Brothers Manufacturing Company, Worcester, Mass.
- Marshall, Fred K. R., VI, '08.** Storage Battery Engineer, C. I. Alexander & Sons, Lawrence, Mass.
- Martin, John C., Jr., IIa, IIB, '05.** Died March 10, 1913.
- Martin, Willard E., IIIa, '07.** Wholesale Small Wares, Somerville, Mass.
- Mason, Frederick A., Ia, '03.** Second Hand, French Worsted Spinning, Monomac Spinning Company, Lawrence, Mass.
- Mathews, William T., Ia, '17; Ia, '18.** Cotton Classer, Hamilton Manufacturing Company, Lowell, Mass.
- Maxcy, Leo M., VIC, '10.** Foreman, F. E. Jewett & Co., Lowell, Mass.
- Maynard, Wilfred B., VIIb, '13.** Paymaster, Brookfield Woolen Company, Lowell, Mass.
- Mears, Lewis N., IVa, '14; IVb, '17.** Ballardvale, Mass.
- Meinelt, Theodore E., VIA, '17.** Electrician, Pacific Mills, Lawrence, Mass.
- Merrill, Edwin C., VI, '04.** Senior Engineer, Housing Division, United States Shipping Board, Emergency Fleet, Philadelphia, Pa.
- Merrill, Gilbert R., VID, '17.** Assistant Instructor, Cotton Yarn Department, Lowell Textile School, Lowell, Mass.
- Merrill, Lester C., VIIb, '15.** Machinist, Saco-Lowell Shops, Lowell, Mass.
- Messiah, Hiram G., Vb, '10.**
- Metcalfe, Walter B., IIB, '13.** With Wamesit Worsted Company, Lowell, Mass.
- Michael, Joseph C., Vb, '12.** United States Navy.
- Michelmores, Harry, IIIa, '06; VIIb, '07.** Assistant Superintendent, Brightwood Manufacturing Company, North Andover, Mass.
- Midwood, Harris, VIIb, '18.** Overseer of Finishing, Chapel Mills Manufacturing Company, Cherry Valley, Mass.

- Miller, Emil H., V, '04.** Charge of Supply Department, Lower Pacific Mills, Lawrence, Mass.
- Miller, Ernest P., Jr., Ib, '13.** With Cheney Brothers, South Manchester, Conn.
- Milot, Aram A., Vb, '14.**
- Milot, Joseph E., VIc, '11.** Carpenter, Amasa Pratt Company, Lowell, Mass.
- Minge, Jackson C., IIIa, '01.**
- Moffatt, Elmer W., Ia, '17.** Fixer, Sharp Manufacturing Company, Lowell, Mass.
- Moir, Alexander L., IIIa, '99; P. G., IIIa, '03.** Died December, 1914.
- Molloy, Andrew, V, '02; IIIa, '05; P. G., IIIa, '06; P. G., IIIa, '09.** Foreman, Lowell Water Works, Lowell, Mass.
- Monahan, Patrick H., Vid, '13.** Machinist, Saco-Lowell Shops, Lowell, Mass.
- Moorehouse, Thomas, VI, '04.** Foreman, Construction Department, General Electric Company, Boston, Mass.
- Morgan, Michael D., IVa, '18.** Chemist, Avery Chemical Company, Lowell, Mass.
- Morin, Alphonse W., Vid, '17.** Machinist, Boston & Maine Repair Shop, North Billerica, Mass.
- Morris, Frank A., V, '01.**
- Morrison, Nathan H., VIA, '18.** Toolmaker, Boston & Maine Railroad, Billerica, Mass.
- Mortenson, Carl W., IIIa, '03; IIa, '08.** Died in 1914.
- Morton, Albert N., Iib, '06.** Of Morton & Andrews, Lowell, Mass.
- Mosher, Chester L., Vlb, '16.** United States Military Service.
- Moss, Joseph, Ia, '15; VIA, '18.**
- Mountain, Everett R., Ia, '15.** Draftsman, Saco-Lowell Shops, Lowell, Mass.
- Mozley, Arthur, VI, '03.** Deceased.
- Muldoon, Joseph M., Vlb, '12.** Mechanical Draftsman, United States Government, Balboa, Canal Zone.
- Mullen, Frank J., Vid, '14.** Steamfitter, Carroll Brothers, Lowell, Mass.
- Murphy, Cornelius D., IIa, '06.** Proprietor, Belvidere Grocery, Savannah, Ga.
- Murphy, Howard H., Iib, '11.** In business, Boston, Mass.
- Murphy, John, Vlb, '16.** Electrician, Appleton Company, Lowell, Mass.
- Murphy, John H., VI, '04.** Treasurer, Lowell Morris Plan Company, Lowell, Mass.
- Murphy, Leo T., Vc, '13.** Income Tax Deputy Collector, United States Internal Revenue Department, Boston, Mass.
- Murphy, Mrs. (Gookin, Alice L.).**
- Musard, Albert E., Jr., Vc, '09.**
- Musard, Henry A., Vc, '13.** Machinist, Remington Arms, Bridgeport, Conn.
- Myers, James W., IIIa, IV, '03; VIIb, '07.** Assistant Superintendent, United States Bunting Company, Lowell, Mass.
- Naden, William, IVa, '19.** Laboratory Work, Lawrence Gas Company, Lawrence, Mass.
- Naud, Mary A., IIib, '17.** Inspector, United States Cartridge Company, Lowell, Mass.
- Naylor, Charles, IVa, '12.** Died January, 1914.
- Neel, Andrew, IVa, '15; IVb, '18.** Second Hand, Dyeing, Arlington Mills, Lawrence, Mass.
- Nelson, Charles E., Iib, '07.** Electrician, Bay State Street Railway Company, Lowell, Mass.

- Nelson, Ernest H.**, I Ib, '00; IIa, '01; IIIa, '06; Ia, '09; Vc, '10; Ib, '13. Inspector, Ordnance Department, Baltimore, Md.
- Nelson, Gustave A.**, Vb, '10. With T. Martin & Brother Manufacturing Company, Lowell, Mass.
- Nelson, James A.**, Ia, '11; Va, '16. Manager, H. E. Locke & Co., Inc., Boston, Mass.
- Nelson, Sigfred W.**, VId, '11. Machinist, Spring Snap Fastener Company, Lynn, Mass.
- Newell, Preston, Ia**, '11. Superintendent, J. W. Sanders, Cotton Mill, Starkville, Miss.
- Newsholme, Charles E.**, V Ib, '11. United States Military Service.
- Nichol, Samuel J.**, IVa, '11; IVb, '14; IVc, '19. In Charge of Dyeing, Waterhead Mills, Lowell, Mass.
- Nichols, Clarence W.**, Vb, '10. Mechanic, Stowe & Woodward Company, Campello, Mass.
- Nichols, Fernald H.**, V Ib, '14. 74 Chauncey Avenue, Lowell, Mass.
- Nichols, Nathan A.**, V Ib, '11. Died Dec. 14, 1918.
- Nicholson, Richard**, I Ib, '03. Section Hand, Arlington Mills, Lawrence, Mass.
- Nicoll, James K.**, VId, '15. Machinist, Wood Worsted Mills, Lawrence, Mass.
- Nicoll, John**, IVa, '10; IVb, '13. Second Hand, Dyehouse, Acadia Mills, Lawrence, Mass.
- Noble, John T.**, V, '99; IIIa, '01. Overseer, Sawyer Woolen Mills, Dover, N. H.
- Noonan, Denis T.**, IIIa, '03. Superintendent, Berkshire Woolen and Worsted Company, Pittsfield, Mass.
- Noring, Ernest G.**, VIIb, '16; Vb, '17. United States Military Service.
- Notman, Frederick W.**, Ia, '04. Clerk, Massachusetts Cotton Mills, Boston, Mass.
- Nugent, Thomas A.**, II, V, '99; VI, '02. Overseer of Carding, Hudson Worsted Company, Hudson, Mass.
- Nutter, James R.**, VI, '08.
- O'Brien, David A.**, IV, '06. With National Aniline and Chemical Company, Caustic Recovery Department, Indigo Plant, Marcus Hook, Pa.
- O'Brien, Frederick A.**, V Ib, '14. United States Military Service.
- O'Brien, Michael F.**, I Ib, '07. Lowell, Mass.
- O'Brien, Raymond L.**, IVa, '15. Died in May, 1918.
- O'Brien, Richard C.**, IIIa, VIIb, '17. Traveling Salesman, Percy A. Legge, Boston, Mass.
- Obst, Ehrich**, VId, '15. Machinist, Everett Mills, Lawrence, Mass.
- O'Connor, Frank H.**, Ia, '15. Second Hand, Appleton Company, Lowell, Mass.
- Ogley, Samuel A.**, I Ib, '00. Overseer of Worsted Spinning, Steere Worsted Mills, Providence, R. I.
- O'Neill, Peter F.**, IV, '05. Superintendent, Standard Processing Company, Chattanooga, Tenn.
- Orrell, Ernest R.**, VId, '13. Machinist, United States Cartridge Company, Lowell, Mass.
- Orrell, Frank L.**, V Ib, '09; I Ib, '12; Vb, '13. Overseer, Massachusetts Mohair Plush Company, Lowell, Mass.
- Ortel, Charles**, VId, '18. Machinist, R. A. Wood, Inc., Lowell, Mass.
- Osbeck, William J.**, IIIa, '08. Deceased.
- Osgood, Charles F.**, Ia, '00; VI, '02. Draftsman, General Electric Company, Lynn, Mass.
- Overend, John**, V, '05. With John and James Dobson, Philadelphia, Pa.

- Palm, Carl H., VIa, '12.** United States Military Service, Camp Devens, Mass.
- Palm, Herbert E., Ia, '18.** Second Hand, Shaw Stocking Company, Lowell, Mass.
- Palmer, G. Buel, IIIa, '03; Vb, '09.** Manager, Cross Awning and Sign Company, Lowell, Mass.
- Paquin, Joseph, VIa, '09; VIb, '10.** Reported missing from the front Oct. 26, 1917.
- Parent, Louis J., Ib, '17.** United States Military Service.
- Parker, Charles L., IVa, '17.** Overseer, Pacific Print Works, Lawrence, Mass.
- Parker, John G., Va, '14.** Clerk, Waterhead Mill, Lowell, Mass.
- Parkhurst, George E., IVa, '17.** Assistant Chemist, Massachusetts State Department of Health, Lawrence, Mass.
- Parkin, Prescott R., Vb, '11.** Receiving Clerk, General Electric Company, East Boston, Mass.
- Parsons, Joseph G., IIIa, '09.** Died Oct. 12, 1918.
- Patrick, Alexander, IIIa, '04.** Omaha, Neb.
- Patterson, Alfred H., IIIa, '08.** Clerk, Lower Pacific Mills, Lawrence, Mass.
- Paul, Frank M., Ia, '17.** Second Hand, Hamilton Manufacturing Company, Lowell, Mass.
- Payette, Mrs. Wilfred (Lachance, Melina).**
- Pearson, Fred, VIa, '09.**
- Pedler, William A., Ia, '06; IVa, '11.** Agent, Acadia Mills, Lawrence, Mass.
- Peel, Hudson, IIb, '01.** Section Hand, Arlington Mills, Lawrence, Mass.
- Peel, Tom, IVa, '16; IVb, '18.** United States Military Service, A. E. F.
- Peever, Alfred, IVa, '19.** Apprentice Dyer, Arlington Mills, Lawrence, Mass.
- Peirce, Charles, Va, '19.** In Design and Sample Weave Room, Massachusetts Cotton Mills, Lowell, Mass.
- Pekarski, Louis A., Vb, '17.** With Washington Mills, Lawrence, Mass.
- Pendlebury, David, Ia, '15; Ia, '16.** Foreman, Pacific Mills, Lawrence, Mass.
- Pendlebury, Harold, VIa, '15.** Machinist, Lower Pacific Mills, Lawrence, Mass.
- Perkins, Thomas, Jr., Ia, '08.** Superintendent, Sanford Mills, Reading, Mass.
- Perron, Francis J., Vb, '11; IIIa, '16; VIIb, '17.** Quartermaster's Department, Washington, D. C.
- Perry, Clarence R., IIb, '11.** Assistant Superintendent, Yarn Department, Washington Mills, Lawrence, Mass.
- Petterson, Birger, VIa, '10.** Superintendent, Lowell Bleachery, Lowell, Mass.
- Petty, John, Ia, '18.** Clerk, Acadia Mills, Lawrence, Mass.
- Phelps, Mary I. (Larkin, Mrs. Joseph P.), IIIb, '10.** 215 Arsenal Street, Watertown, Mass.
- Pickard, Marie L. C., IIIb, '18.** Hair Dresser, Rhodes Hair Store, Lowell, Mass.
- Picken, William T., IIIa, '08.** Purchasing Agent and Paymaster, Silesia Worsted Mills, North Chelmsford, Mass.
- Pickles, Wilfrid, Va, '14.** With Pacific Mills, Lawrence, Mass.
- Pierce, Duncan H., VIIb, '14.** Treasurer and Manager, Foster Grain Company, Lowell, Mass.
- Pierce, Gordon J., Vb, '14.** With Riverside Mills, Olneyville, R. I.
- Pihl, C. Edward, VI, '06.** Master Mechanic, Stirling and Belvidere Woolen Mills, Lowell, Mass.
- Pihl, Ingrid I. (Robinson, Mrs. James P.), IIIb, '12.** 208 Princeton Street, Lowell, Mass.
- Pihl, Mansfred M., VIb, '14; VIa, '17.** Machinist, United States Cartridge Company, Lowell, Mass.
- Pike, Daniel P., IVa, '15.** Farmer, Wamesit, Mass.

- Pinkham, Banford O., VI**d, '14. Overseer, Smith & Dove Manufacturing Company, Andover, Mass.
- Pittendreigh, John M., Ia**, '06. Spray, N. C.
- Playdon, Louis C., Ia**, '14. Overseer of Spinning, Pacific Mills, Lawrence, Mass.
- Playdon, Roy A., IIb**, '16. Assistant Agent, Valley Mills, Providence, R. I.
- Plumer, Paul T., Vb**, '08. Cloth Inspector, United States Bunting Company, Lowell, Mass.
- Poore, Herbert E., IVa**, '15. With Washington Mills, Lawrence, Mass.
- Porter, George K., Jr., IIIa**, '07; **P. G., IIIa**, '08. Salesman, Wellington, Sears & Co., San Francisco, Cal.
- Porter, William E., VIa**, '15. Machinist, United States Cartridge Company, Lowell, Mass.
- Potter, Richard W., V**, '02. Overseer of Weaving, Massachusetts Cotton Mills, Lowell, Mass.
- Preble, George A., IIIa**, '08; **Va**, '12; **Vb, Vc**, '13; **IVa**, '15; **IVb**, '18. Designer, Massachusetts Cotton Mills, Lowell, Mass.
- Prescott, William B., Va**, '12. Cotton Broker, A. H. Chase & Co., Boston, Mass.
- Prisley, Frederic A., IVa**, '17. British Expeditionary Forces, France.
- Protopapas, Taxiarchis Z., IIb**, '17. With Boott Cotton Mills, Lowell, Mass.
- Quance, Alfred, IVa**, '16. United States Naval Reserve.
- Quinn, James H., VIIb**, '13. Second Hand, Arlington Mills, Lawrence, Mass.
- Racicot, Marie E., IIIb**, '11. 842 Moody Street, Lowell, Mass.
- Randall, William O., IIb**, '13.
- Raney, Walter A., VIa**, '18. Civil Engineer, City Engineer's Office, Medford, Mass.
- Ray, Delbert E., IVa**, '19. Assistant Dyer, Massachusetts Mohair Plush Company, Lowell, Mass.
- Read, Paul A., VIIb**, '07; **Va**, '09. Superintendent, Seaconnet Mills, Fall River, Mass.
- Ready, William C., Vlb**, '17. Student, Massachusetts Institute of Technology, Boston, Mass.
- Reardon, Timothy H., VI**, '06. Instructor, Vocational School, Lowell, Mass.
- Redman, H. Stewart, IIIa**, '04; **V**, '05; **Ia**, '07; **IV**, '10; **VIa**, '12; **Ib**, '13. Assistant Agent, Stark Mills, Manchester, N. H.
- Redpath, Robert H., VIIb**, '13; **Vb**, '14. With Brightwood Manufacturing Company, North Andover, Mass.
- Reed, Foster C. K., VI**, '04. Steam Engineer, Farwell Bleachery, Lawrence, Mass.
- Regan, Joseph L., Vlb**, '15. Meter Repairing, Lowell Gas Light Company, Lowell, Mass.
- Reynolds, Eugene A., VI**, '06. With Lawrence Manufacturing Company, Lowell, Mass.
- Reynolds, Hiram L., IIIa**, '01. Agent, Saunders Cotton Mills, Saundersville, Mass. and Whitinsville Cotton Mills, Whitinsville, Mass.
- Reynolds, James J., Vc**, '13. Boston, Mass.
- Rhodes, Joseph E., V**, '04. Chicago, Ill.
- Rhodes, William H., IIIa**, '16; **IVa**, '18. With Ayer Mills, Lawrence, Mass.
- Richard, Eugene, VIa**, '19. 12 School Street, Dracut, Mass.
- Richards, Francis G., IIa**, '06. Linotype Operator, Brockton Enterprise, Brockton, Mass.
- Richards, Raymond A., IIIb**, '15. With United States Cartridge Company, Lowell, Mass.

- Riley, Edward T., IIIa, '12. Textile Inspector, Quartermaster's Department, Boston, Mass.
- Riley, Leo R., Va, '18. Lawrence Manufacturing Company, Lowell, Mass.
- Ritter, Alfred E., IIb, '07. Died Dec. 12, 1913.
- Robbins, John, IIb, '07. Overseer, Silesia Worsted Mills, North Chelmsford, Mass.
- Roberts, Joseph, Vb, '15. Clerk, Cooper Brothers, Lawrence, Mass.
- Roberts, Kenneth B., VIIb, '17. Student, Lowell High School, Lowell, Mass.
- Robinson, James E., VIIb, '11.
- Robinson, Mrs. James P. (Pihl, Ingrid I.).
- Robinson, Ruddach P., VIIb, '11. Superintendent, Beaver Brook Mills, Colinsville, Mass.
- Robinson, Thomas, Ia, '09; Vc, '10. Overseer, Newmarket Manufacturing Company, Newmarket, N. H.
- Rockwell, Henry D., IIa, '03. With Davis & Furber Machine Company, North Andover, Mass.
- Rockwell, Samuel F., IIa, '02. Superintendent, Mule Department, Davis & Furber Machine Company, North Andover, Mass.
- Rodger, Thomas C., IVa, '15. Stenographer, Columbian Manufacturing Company, Greenville, N. H.
- Roesler, Alfred, IIIa, '14. Died July 8, 1916.
- Roessel, William, Vb, '19. With George E. Kunhardt, Lawrence, Mass.
- Rogers, John F., Ia, '11. With Saco-Lowell Shops, Lowell, Mass.
- Rollins, Henry E., VIIb, '12. Overseer of Dyeing, American Woolen Company, Moosup, Conn.
- Rollins, Sidney R., IIb, '13. Clerk, American Woolen Company, Boston, Mass.
- Rooney, George W., Ia, '04. Superintendent, New Hampshire Spinning Mills Company, Penacook, N. H.
- Root, Francis X., Jr., IIIa, '10.
- Rostron, Robert, Va, '16. Designer, Massachusetts Cotton Mills, Lowell, Mass.
- Rouine, Francis E., VIb, '14. Assistant Foreman, United States Cartridge Company, Lowell, Mass.
- Rousseau, Joseph E., Ia, '18. Second Hand, Boott Mills, Lowell, Mass.
- Rowell, Herman C., Ia, IIb, '00. Deceased.
- Rowlands, Harold, Va, '11. Clerk, Massachusetts Cotton Mills, Boston, Mass.
- Royds, James, Ia, '12. Overseer, Boott Mills, Lowell, Mass.
- Rushworth, Walter, VI, '06. Electrician, United States Navy Yard, Boston, Mass.
- Rutledge, Robert J., Ia, Va, '17. Chief Property Clerk, Department of Public Utilities, Camp Devens, Mass.
- Ryan, Edward P., Ia, '09.
- Saalfrank, Joseph C., IIIa, '08. Salesman, Dunker & Perkins Chemical Company, Boston, Mass.
- Sanborn, Harold S., VIIb, '15. Cloth Examiner, Brightwood Manufacturing Company, North Andover, Mass.
- Saunders, Edward B., IIIa, '01. Salesman, Remington Typewriter Company, Fall River, Mass.
- Saunders, Louis P., Vb, '16. Second Hand, Sutton's Mills, North Andover, Mass.
- Savage, Charles F., IVa, '12. Civil Engineer, Smith & Brooks, Lowell, Mass.
- Sawyer, Samuel S., VIa, '17. United States Military Service.
- Scally, Edward, VI, '08. Baker, Lowell, Mass.
- Scanlon, Edward J., IIb, '01. Wood and Coal Dealer, Lawrence, Mass.

- Schermerhorn, George E., Ia, '02; Va, '08.** Superintendent, Chipman Knitting Mills, Easton, Pa.
- Schmidt, Hartman F., IIb, VIIb, '14; IIa, '15.** Instructor, Design Department, Lowell Textile School, Lowell, Mass.
- Schofield, John S., IIIa, '03.** Designer, Berkshire Woolen and Worsted Company, Pittsfield, Mass.
- Schoon, Fenton, IIb, '03.** 297 Locust Street, Holyoke, Ma.s.
- Schubert, George J., V, '06; IIIa, '09.** Second Hand, Pemberton Company, Lawrence, Mass.
- Schuerfeld, Harry W., IIIa, '09.** City Salesman, Sparrow-Chisholm & Co., Boston, Mass.
- Schultz, Hughey B., VIb, '17.**
- Schuster, Raymond H., VIIb, '17.** Assistant Superintendent and Designer, Schuster Woolen Company, East Douglas, Mass.
- Schuster, William F., VIIb, '08.** Second Hand, Washington Mills, Lawrence, Mass.
- Schwarzenberg, Raymond C., VIb, '17.** Machinist, S. R. Bailey & Co., Amesbury, Mass.
- Scott, Joseph A., IVa, '19.** 276 Broadway, Lawrence, Mass.
- Scully, Patrick F., IIIa, VIIb, '15; Vb, '16.** Loomfixer, United States Worsted Company, Lowell, Mass.
- Searle, Edward H., Ia, '18.** Weaver, Lawrence Duck Company, Lawrence, Mass.
- Seddon, N. Graham, IIIa, '08.** Superintendent, Commonwealth Manufacturing Company, Brooklyn, N. Y.
- Semple, Alexander, IIIa, '08.** In Charge of Cost Accounting Department, United States Cartridge Company, Lowell, Mass.
- Senior, George, Va, '06; Ia, Vc, '07.**
- Seymour, John S., VIa, '19.** Automobile Repairman, George R. Dana, Lowell, Mass.
- Shackleton, John H., IV, '08; Ia, '10.** Superintendent of Dyeing and Finishing, Aberfoyle Manufacturing Company, Chester, Pa.
- Shaffer, William A., VIa, '11.** Machinist, W. W. Carey Company, Lowell, Mass.
- Shannon, Philip J., V, '01.** Die Maker, Tubular Rivet and Stud Company, Wollaston, Mass.
- Sharpe, John R., VI, '06.** Overseer, Saco-Lowell Shops, Lowell, Mass.
- Sharples, Lloyd K., VIIb, '17.** Assistant Finisher, M. T. Stevens & Sons Company, Haverhill, Mass.
- Shaw, James, V, '04.**
- Shaw, Thomas A., VIb, '16.** Third Hand, Lawrence Manufacturing Company, Lowell, Mass.
- Shaw, William, VIa, '13; Ia, '17.** Draftsman, Saco-Lowell Shops, Kitson Plant, Lowell, Mass.
- Shearer, David D., VIIb, '12; Vb, '13.** 15 Garfield Street, Lawrence, Mass.
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- Shedd, Howard P., IVb, '15.** Chemist, West Virginia Pulp and Paper Company, Piedmont, W. Va.
- Sheppard, Byron H., VI, '06.** Mechanical Engineer, Jenckes Spinning Company, Pawtucket, R. I.
- Sheriff, William, Jr., IVa, '18.** With Everett Mills, Lawrence, Mass.
- Shields, John J., Va, '11.** Fireman, State of Massachusetts, Lowell, Mass.
- Silcox, Arthur E., Ia, '00.** Draftsman, Saco-Lowell Shops, Lowell, Mass.

- Silk, Frederick C. M., IV, '05. With Bartlett & Dow Company, Lowell, Mass.
- Silk, Patrick E., VIIb, '06. Overseer of Finishing, Auburn Woolen Mill, Auburn, N. Y.
- Simmers, Arthur A., Vlb, '15. Millwright, Wood Worsted Mills, Lawrence, Mass.
- Simola, Emil J., IIa, IIb, '05. Finland.
- Simoneau, Verner W., VI, '08. Died July 16, 1917.
- Skidmore, Russell P., Vlb, '12. Springfield, Mass.
- Skinner, Clarence W., IIIa, '05; P. G., IIIa, '06; VIIb, '07. With Brightwood Manufacturing Company, North Andover, Mass.
- Slater, Arthur C., IVa, '17. United States Military Service, Army of Occupation, Germany.
- Sleeper, Robert R., VIIb, '13. With National Aniline and Chemical Company, Buffalo, N. Y.
- Smart, George A., Va, '15; Vc, '16. With Massachusetts Cotton Mills, Lowell, Mass.
- Smith, Arthur, IIIa, '05; P. G., IIIa, Va, '06; Vc, '07; P. G., IIIa, '09. Designer, Pemberton Mills, Lawrence, Mass.
- Smith, Edward, Ia, '04. Overseer, Bourne Mills, Fall River, Mass.
- Smith, Edwin H., IVa, '16.
- Smith, Ernest B., Vb, '07. With United States Worsted Company, Lawrence, Mass.
- Smith, Fred, IIb, '01. Deceased.
- Smith, George A., IIIa, '05; P. G., IIIa, '06; VIIb, '09. Overseer, Ludlow Manufacturing Associates, Ludlow, Mass.
- Smith, Gordon N., IVa, '15. Letter Carrier, Lawrence, Mass.
- Smith, James, Vb, '07.
- Smith, John W., IIb, '04. Garage Foreman, Beacon Motor Car Company, Boston, Mass.
- Smith, Joseph, VIa, '17. Machinist, Gillespie Manufacturing Company, Lowell, Mass.
- Smith, Leonard, VIa, '14. Machinist, United States Cartridge Company, Lowell, Mass.
- Smith, Mae V. (Alexander, Mrs. James), IIIb, '15. 31 Manahan Street, Lowell, Mass.
- Smith, Miles H., IIb, '15; Vb, '16; VIIb, '17. With Washington Mills, Lawrence, Mass.
- Smith, Percy H., Vb, '07. Washington Mills, Lawrence, Mass.
- Smith, William E., IIIa, '05; P. G., IIIa, '06; VIIb, '07; P. G., IIIa, '09. Clerk, Kennedy & Co., Lawrence, Mass.
- Smith, William F., VIa, '12. 58 Seventh Street, Lowell, Mass.
- Smith, William H., IIb, '02. Overseer of Spinning, Highland Worsted Mills, Camden, N. J.
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- Spillane, James F., VIa, '16. Machinist, United States Cartridge Company, Lowell, Mass.

- Spurr, Albert R., VIIb, '08.** Overseer, Atlantic Mills, Providence, R. I.
- Spurr, James H., IV, '08.** Bacteriologist, State Department of Health Experiment Station, Lawrence, Mass.
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- Stearns, Orlo F., IVa, '11.** Assistant Examiner, Patent Office, Department of the Interior, Washington, D. C.
- Steere, Samuel A., Va, '14.** Agent, Greylock Mills, North Adams, Mass.
- Sterling, Walter, IIIa, '04.** Second Hand, Kilburn Manufacturing Company, New Bedford, Mass.
- Stevens, Frank W., VI, '05.** Fire Protection Engineer, Associated Factory Mutual Insurance Company, Boston, Mass.
- Stevens, Harold S., IIIa, '12.** Polyclinic Hospital, New York.
- Stevenson, Robert P., Ia, '12.** Salesman, Wm. V. Threlfall, Boston, Mass.
- Stevenson, William, II, '99; IIIa, '02.** Manager, Carolina Cotton and Woolen Mills Company, Spray, N. C.
- Stewart, Charles, Va, '08.**
- Stewart, George, Ia, IVa, '11; Va, '14; VIa, '16; VIIa, '18.** Overseer of Dyeing, Massachusetts Cotton Mills, Lowell, Mass.
- Stewart, Warren D., IVa, '15.** Chief Chemist, Pawtucket Gas Company, Pawtucket, R. I.
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- Stokham, Burton I., IV, '03; P. G., IV, '04.**
- Stokham, Ernest F., IVa, '14.** Foreman, Lowell Dye Works, Lowell, Mass.
- Stopherd, William H., II, V, '99; VI, '02; IIIa, '05; P. G., IIIa, '06; P. G., IIIa, '09; VIIb, '10.** With Saco-Lowell Shops, Lowell, Mass.
- Storin, Edmund A., IVa, '18.** Dye Mixer, Merrimack Manufacturing Company, Lowell, Mass.
- Stott, Bertram S., Vb, '10.** M. T. Stevens & Sons Company, Andover, Mass.
- Stott, Samuel, IV, '10.** Overseer of Dyeing, Arlington Mills, Lawrence, Mass.
- Sugden, Albert G., IIIa, '12; VIIb, '13.** Designer, United States Bunting Company, Lowell, Mass.
- Sullivan, Edward B., Va, '17.** Loomfixer, Hamilton Manufacturing Company, Lowell, Mass.
- Sullivan, Humphrey F., Ia, '09.** Deceased.
- Sullivan, Joseph D., IIIa, '16.** Second Designer, M. T. Stevens & Sons Company, North Andover, Mass.
- Sullivan, Michael F., VIIb, '10; VIa, '13.** United States Military Service.
- Swanson, Victor E., IVa, '12; IVb, '18.** Carbonizer, Stirling Mills, Lowell, Mass.
- Swenson, Arthur S., VIIb, '19.** With Marland Mills, Andover, Mass.
- Swift, Edward S., V, '99; Ia, '01.** Clergyman, Woodstock College, Woodstock, Md.
- Swift, John W., IIB, '15.** Overseer, Hamilton Woolen Company, Southbridge, Mass.
- Sykes, Alvin E., VIa, '09; Ia, '18.** Draftsman, Saco-Lowell Shops, Lowell, Mass.

- Taff, Joseph C., VIa, '16.** Electrician, Boston Navy Yard, Boston, Mass.
- Takahashi, Gentaro, Ia, '16.** Student, College of Business Administration, Boston University, Boston, Mass.
- Talbot, Joseph, IVa, '17.** Overseer of Dyeing, Pacific Print Works, Lawrence, Mass.
- Tarpey, John F., IIa, '04.** With Merrimack Manufacturing Company, Lowell, Mass.
- Taylor, Albert, VIId, '18.** Machinist, United States Worsted Company, Lowell, Mass.
- Taylor, Fred H., Va, '16.** With Hobson & Lawler Company, Lowell, Mass.
- Taylor, Harold S., VIb, '12.** Inspector, Lamson Company, Lowell, Mass.
- Teichmann, Alfred A., Vb, '08.** With Washington Mills, Lawrence, Mass.
- Tennant, Joseph A., VIb, '11.** Machinist, Pacific Mills, Lawrence, Mass.
- Thomas, Fred N., IIb, '18.** Section Hand, Wood Worsted Mills, Lawrence, Mass.
- Thompson, Charles B., VI, '04.** United States Military Service.
- Thompson, George, Vb, '15.** Loomfixer, Ayer Mills, Lawrence, Mass.
- Thyng, Thomas C., VIa, '17.** Engineer, Pacific Mills, Lawrence, Mass.
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- Todd, Walter E., VIIb, '16; Vb, '17.** With Glazier Manufacturing Company, South Glastonbury, Conn.
- Toepler, Carl, IVa, '17.** Student, Lowell Textile School, Lowell, Mass.
- Tonge, John, IV, '05.** Salesman, Holliday-Kemp Company, Inc., Boston, Mass.
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- Tucker, John T., Ia, '08; Va, '09.** Clerk, Saco-Lowell Shops, Lowell, Mass.
- Tucker, William W., Ia, '16.** Foreman, Lawrence Manufacturing Company, Lowell, Mass.
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- Turner, Roscoe C., IIb, '14.** Draftsman, Saco-Lowell Shops, Lowell, Mass.
- Twomey, Hugh, VIId, '14.** Blacksmith, Lowell, Mass.
- Umpleby, Thomas B., V, '02.** Designer, Stanley Woolen Company, Uxbridge, Mass.
- Upton, Frank A., Ia, '03.** Superintendent, Yarn Department, Shaw Stocking Company, Lowell, Mass.
- Varney, Manley H., IIIa, '02; Ia, '03.** Died January, 1916.
- Varnum, Arthur C., Vb, '07; P. G., IIIa, '08; VIIb, '09.** Superintendent, Hamilton Woolen Company, Southbridge, Mass.
- Vause, John, Va, '12.**
- Vogt, Alfred H., IIIa, '02; IIb, '09.** Designing Department, George E. Kunhardt's Mills, Lawrence, Mass.
- Vogt, Harry A., Vb, '06.** Died Feb. 22, 1910.

- Wade, Frank J., Vb, '11.
- Wahlberg, Einar S., Ia, '07.
- Wainwright, Harold, IVa, '13; IVb, '16. Second Hand, Dyeing, Everett Mills, Lawrence, Mass.
- Walker, David, IIIa, '02; P. G., IIIa, '03. Overseer, Burlington Mills, Winooski, Vt.
- Walker, John J., VIB, '15. Draftsman, Pacific Mills, Lawrence, Mass.
- Walker, William, Vb, '18. Machinist's Helper, Boston & Maine Car Shops, Billerica, Mass.
- Walker, William, Jr., VIIb, '06. Superintendent, Ottaquechee Woolen Company, Evarts, Vt.
- Walsh, Michael L., Ia, '09.
- Walton, Frank L., Ia, '11. Manager, Yarn Department, J. Spencer Turner Company, New York City.
- Walworth, Walter F., VIB, '15. Engineer, Locks and Canals, Lowell, Mass.
- Warburton, William H., Vb, '18. Weaver, United States Bunting Company, Lowell, Mass.
- Ward, Bernard D., IIIa, '11. Post Office Clerk, Lowell, Mass.
- Ward, Charles, VIB, '18. Clerk, Wood Worsted Mills, Lawrence, Mass.
- Ward, Herbert H., Vb, '12. Gilbertville, Mass.
- Ward, James J., VIIb, '06. With United States Cartridge Company, Lowell, Mass.
- Wardrobe, William L., Ia, '00. Overseer of Cotton Carding, Davol Mills, Fall River, Mass.
- Ware, Edward W., IIIa, '09. With Wellington, Sears & Co., Boston, Mass.
- Waring, Joseph, VIa, '16. With Washington Mills, Lawrence, Mass.
- Waterhouse, Joseph, IV, '00. Lowell, Mass.
- Waters, Thomas W., Jr., Va, '15. With American Woolen Company, Lawrence, Mass.
- Waterworth, Frank W., Vb, '07. Overseer, Ayer Mills, Lawrence, Mass.
- Watson, Luther F., IIB, '09. Assistant Paymaster, Arlington Mills, Lawrence, Mass.
- Webb, Francis H., V, '04; IIIa, '07. With Hobson & Lawler, Lowell, Mass.
- Webber, John F., IIIa, '07; P. G., IIIa, '08.
- Webster, Orrin H., Ia, '12. Assistant Superintendent, Massachusetts Cotton Mills, Lowell, Mass.
- Weigel, Frederick A., VIB, '09. Student, New Hampshire College, Durham, N. H.
- Weinhold, William F., IIIa, '15. United States Military Service.
- Weisberg, Harry A., VIB, '16. 117 1-2 Valley Street, Lawrence, Mass.
- Welch, Benjamin L., VIB, '10. United States Navy.
- Wells, Leland A., VIB, '19. Mechanical Repairman, Lowell Electric Light Corporation, Lowell, Mass.
- Wesson, Paul B., Ia, '01. Mechanical Superintendent, Clinton Wright Wire Company, Palmer, Mass.
- West, Richard E., IVa, '16; IVb, '18. Assistant Superintendent, Stirling Mills, Lowell, Mass.
- Wheeler, Harry L., Ia, '17. Paymaster, Merrimack Manufacturing Company, Lowell, Mass.
- Whitcomb, Harry E., Ia, '06. Deceased.
- Whitehead, Bennett, IIB, '01. Overseer, Wood Worsted Mills, Lawrence, Mass.
- Whiteoak, Percy, IIB, '17. With Brookside Worsted Mills, West Chelmsford, Mass.

- Whitley, Arthur M., IIa, I Ib, '15.** Superintendent, Abbot Worsted Company, Graniteville, Mass.
- Whitley, Walter R., VIb, '18.** Draftsman, Pacific Mills, Lawrence, Mass.
- Whitman, William P., IVa, '10; IVb, '13.** Second Hand, Dyeing, Arnold Print Works, North Adams, Mass.
- Whitney, Frederick A., IV, '10.** Dyer, John S. Boyd Company, Williamstown, Mass.
- Whittaker, Thomas B., IIb, '07; I Ib, '08.** Bookkeeper, Quidnick-Windham Manufacturing Company, Providence, R. I.
- Whittier, Arthur P., Va, '17.** Manager of Foreign Department, Delano, Bartlett & Dexter, Inc., Boston, Mass.
- Wicks, Frederic M., IIIa, '12.** Overseer, Jefferson Manufacturing Company, Jefferson, Mass.
- Wiggin, Leon M., IIIa, '07; P. G., IIIa, '08.** Head Designer, United States Worsted Company, Uswoco Mills, Lawrence, Mass.
- Wilde, Herman E., IVa, '15.** Assistant Dyer, Washington Mills, Lawrence, Mass.
- Wilde, Thomas E., IIa, '05.** Proprietor, Jeremiah Clark Machinery Company, Lowell, Mass.
- Wilkinson, Herbert R., IVa, '19.** Apprentice Dyer, Arlington Mills, Lawrence, Mass.
- Wilkinson, Joseph, IIIa, '12; VIIb, '13.** Loomfixer, United States Bunting Company, Lowell, Mass.
- Wilkinson, William L., IIIa, '17.** Designer, Wood Worsted Mills, Lawrence, Mass.
- Wiley, Frank S., Ia, '01.** Boss Carder, Jenckes Spinning Company, Pawtucket, R. I.
- Willgeroth, Henry J., IIIa, '08.** In business, Hillsboro Dairy Company, Hillsboro, N. H.
- Williams, Allen R., Ia, '10; Va, '11.** Salesman, Crompton, Richmond Company, New York City.
- Williams, Sumner H., VID, '19.** Machinist, Merrimack Manufacturing Company, Lowell, Mass.
- Williamson, Isaac F., IV, '01.** Foreman dyer, Hamilton Manufacturing Company, Lowell, Mass.
- Willmott, Herbert J., VIa, '11.** Chief Mechanical Engineer, Hennessey Manufacturing Company, Northampton, Mass.
- Willmot, Joseph, IIIa, '08.** Assistant Superintendent, Bay State Cotton Corporation, Lowell, Mass.
- Willmot, William, IIIa, '99.** Designer, Hamilton Web Company, Hamilton, R. I.
- Wilson, Calvin E., I Ib, '02.**
- Wilson, George H., I Ib, '02.** Section Hand, Pacific Mills, Lawrence, Mass.
- Wilton, George H., IIIa, '99.** Deceased.
- Wilton, George H., IIIa, '17.** M. T. Stevens & Sons Company, North Andover, Mass.
- Wing, Charles T., IIIa, '00.** Inspector, Quartermaster's Corps, Plymouth, Mass.
- Winkler, Adolph J., VIIb, '17.** Student, Brooklyn Polytechnic Institute, Brooklyn, N. Y.
- Winship, Roger, Va, '17.** 32 Princeton Street, Lowell, Mass.
- Winslow, Warren A., I Ib, '15.** Clerk, Abbot Worsted Company, Forge Village, Mass.
- Wiswall, Frank T., V, '05.** United States Military Service, A. E. F., France.

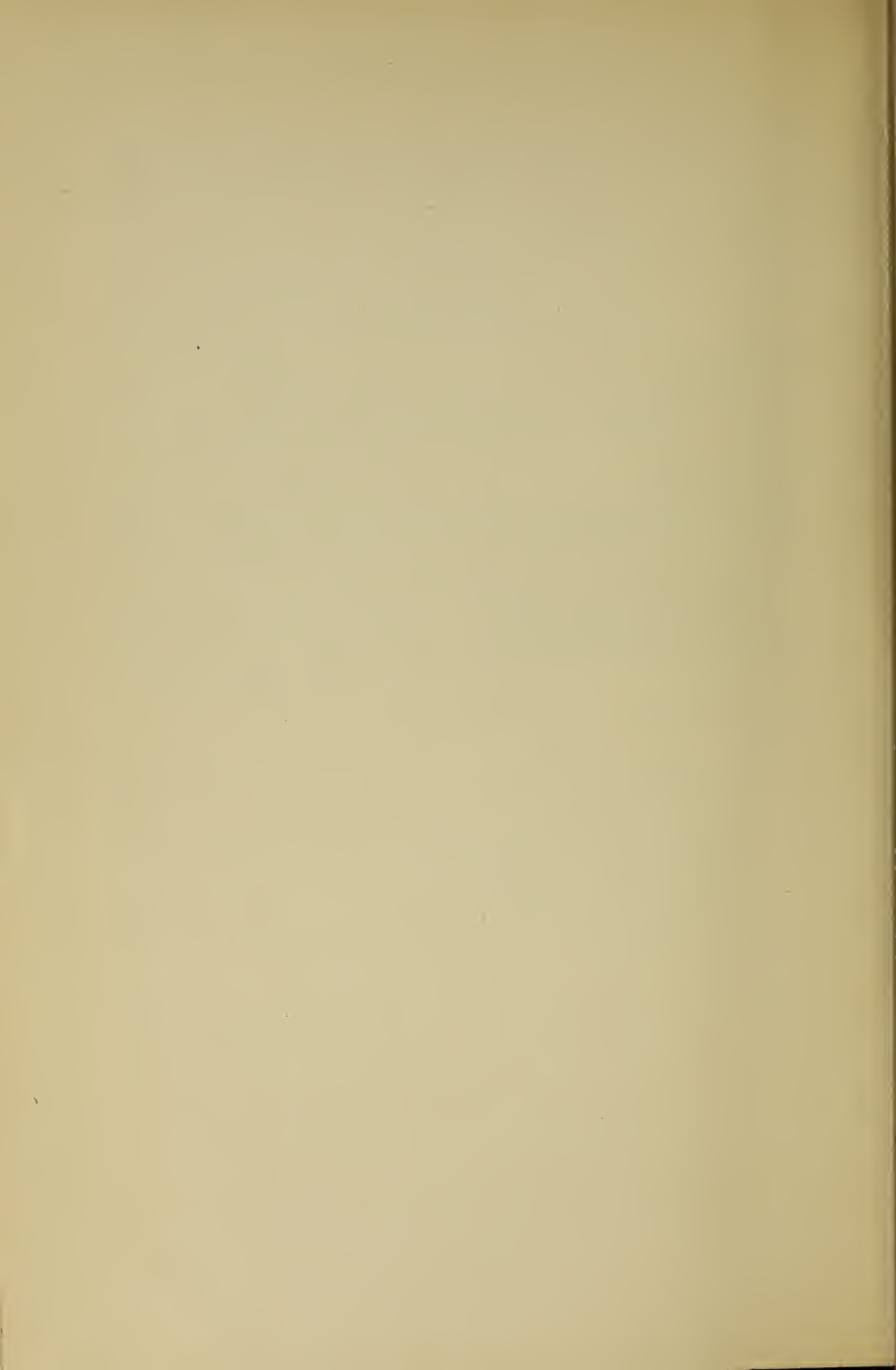
- Wolf, William C., Va, '07; Vb, '08.** Loomfixer, Pacific Mills, Lawrence, Mass.
Wolger, John J., IIIa, '07. Loomfixer, Pacific Mills, Lawrence, Mass.
Wollin, Frederick W., Va, '11. Second Hand, Utica Steam Cotton Mill, Utica, N. Y.
Wood, Arthur S., Va, '12. Second Hand, Granby Elastic Web Company, Granby, P. Q.
Wood, Jonathan, Ia, '02; Va, '08. Overseer, Lawrence Manufacturing Company, Lowell, Mass.
Wood, Samuel J., Ia, '15. United States Military Service.
Woodbury, Eugene P., VIIb, '14. With George E. Kunhardt Corporation, Lawrence, Mass.
Woodbury, W. Sanford, Ia, '00. Agent, Bay State Cotton Corporation, Newburyport, Mass.
Worthington, John A., Ia, '10. United States Military Service.
Wright, Frederick J., Vb, '11. Died March 19, 1914.

Yare, John F., Vb, '07.
Yeates, Percy E., Ia, '17. Clerk, William Whitman Company, Inc., Boston, Mass.
Yeomans, Herbert D., Vb, '18. Clerk, Massachusetts Mohair Plush Company, Lowell, Mass.
Young, Richard, Jr., Va, '08; Vc, '09. With Heinze Electric Company, Lowell, Mass.
Younger, Andrew, IIIa, '13; VII, '14. Designer, Pioneer Mills, Pittsfield, Me.

Zimmer, George D., IVa, '15. With the Fore River Shipbuilding Corporation, Quincy, Mass.

INDEX.

	PAGE
Administration,	4
Application blank,	79
Courses of instruction,	11
Entrance requirements,	7
Fees and deposits,	8
General information,	7
Graduates, class of 1919,	34
Graduates, alphabetical register,	45
Instructors,	4
Officers of instruction and administration,	4
Olney Chemical Alumni Association,	33
Register of students, class of 1918-19,	36
Registration,	8
Report of standing,	7
Schedule of classes,	9
Sessions,	7
Subjects of instruction: —	
Cotton Yarn Department,	19
Woolen and Worsted Yarn Department,	20
Textile Design and Weaving Department,	22
Chemistry and Dyeing Department,	24
Textile Engineering Department,	27
Finishing Department,	29
Supplies,	8
Trustees,	3
Tuition,	8



THIS SHOULD BE FILLED OUT AND SENT TO THE PRESIDENT

LOWELL, MASS.

DATE.....

School last attended.....

b. Woolen and Worsted Finishing.

Signature,

Date.....

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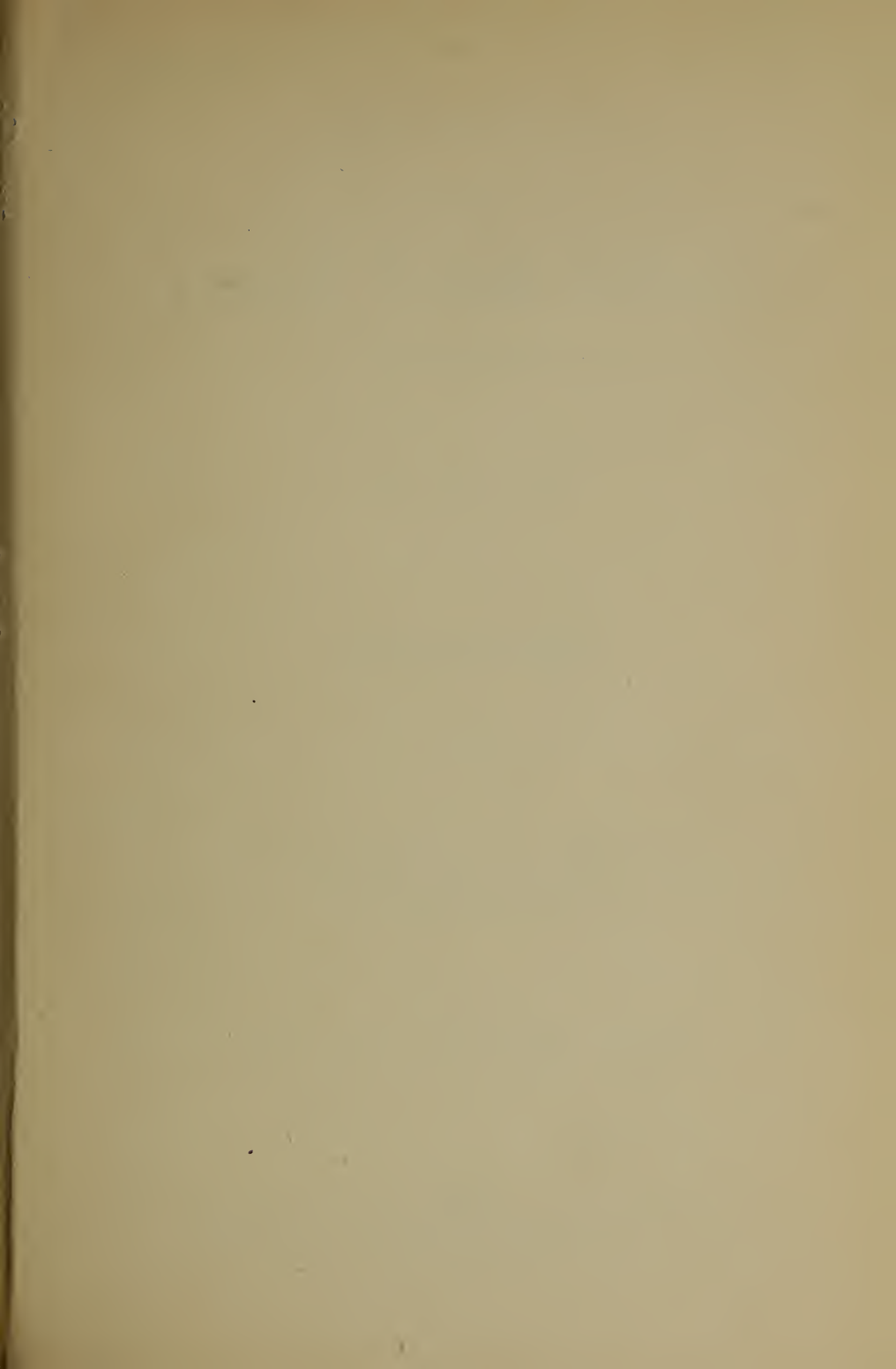
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ASTOR LENOX AND TILDEN FOUNDATIONS

NEW YORK





BULLETIN

OF THE

Lowell Textile School

LOWELL, MASS.

Issued Quarterly

1919-1920

Entered August 26, 1902, at Lowell, Mass., as second-class matter
under Act of Congress of July 16, 1894

Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3,
1917, authorized October 21, 1918

Moody Street and Colonial Avenue

BOSTON

WRIGHT & POTTER PRINTING CO., STATE PRINTERS

32 DERNE STREET

1919

THE LOWELL TEXTILE SCHOOL ON A PEACE BASIS.

With the demobilization of the Student Army Training Corps in December, 1918, following the signing of the armistice, all efforts were directed towards the resumption of courses of study in all departments upon as nearly as possible a pre-war basis. It was necessary to review certain subjects and to return to the curriculum some that had been temporarily dropped.

The registration of the day classes during the period of the S. A. T. C., including enlisted men, was 185. A majority of these young men had prepared to enter Lowell Textile School without regard to the plan of the S. A. T. C., so that when this organization was demobilized these same men continued their courses, and to them were added a considerable number of former students who upon obtaining their discharge returned to school to finish or continue their course. This resulted in a registration in the second term of 169 students, a number much in excess of any expectations.

During the period of the war many of our instructing staff either resigned to take positions in some branch of the service or were drafted. The increased registration of the second term and the return to former courses brought the need of a larger staff. Fortunately some of these instructors were able to obtain their release and to return to the school. Among these were Mr. John C. Lowe of the Wool Yarn Department, who had served in the Quartermaster's Department of the army, and Mr. Arthur K. Johnson of the Chemistry Department, who had served in the Medical Department, at Camp Devens. Mr. Hartman Schmidt, a former student who had been with the Quartermaster's Department, entered the Design Department as an instructor, and Mr. Guy E. Branch, an instructor in the Wool Yarn Department, resumed his duties at the school upon his return from overseas. To the staff of the Engineering Department was added Mr. Wendell H. Kayser as instructor in mechanical drawing and mathematics.

Between the close of the school year of 1918-19 and the opening of the first term of the year 1919-20 the school lost by death one of its trustees and founders, and one who throughout its history had been not only a strong friend and support of the school, but a great advocate for the higher technical textile training which is given at this institution. Mr. Alexander G. Cumnock will always be remembered because of his close

association with this school. He has since its establishment been president of the Board of Trustees, and at the time of the transfer of the property to the Commonwealth he was elected to the chairmanship of the new Board. Up to the time of his death his interest in the progress and future of the school was keen, and when for the last time he left Lowell for Pride's Crossing, Massachusetts, for a short rest, he was looking forward with as much interest as a young man to the opening of the fall term of the school and its anticipated large enrollment. It is the regret of many of his friends that he could not have lived to see the present student body, — the largest in the history of the school.

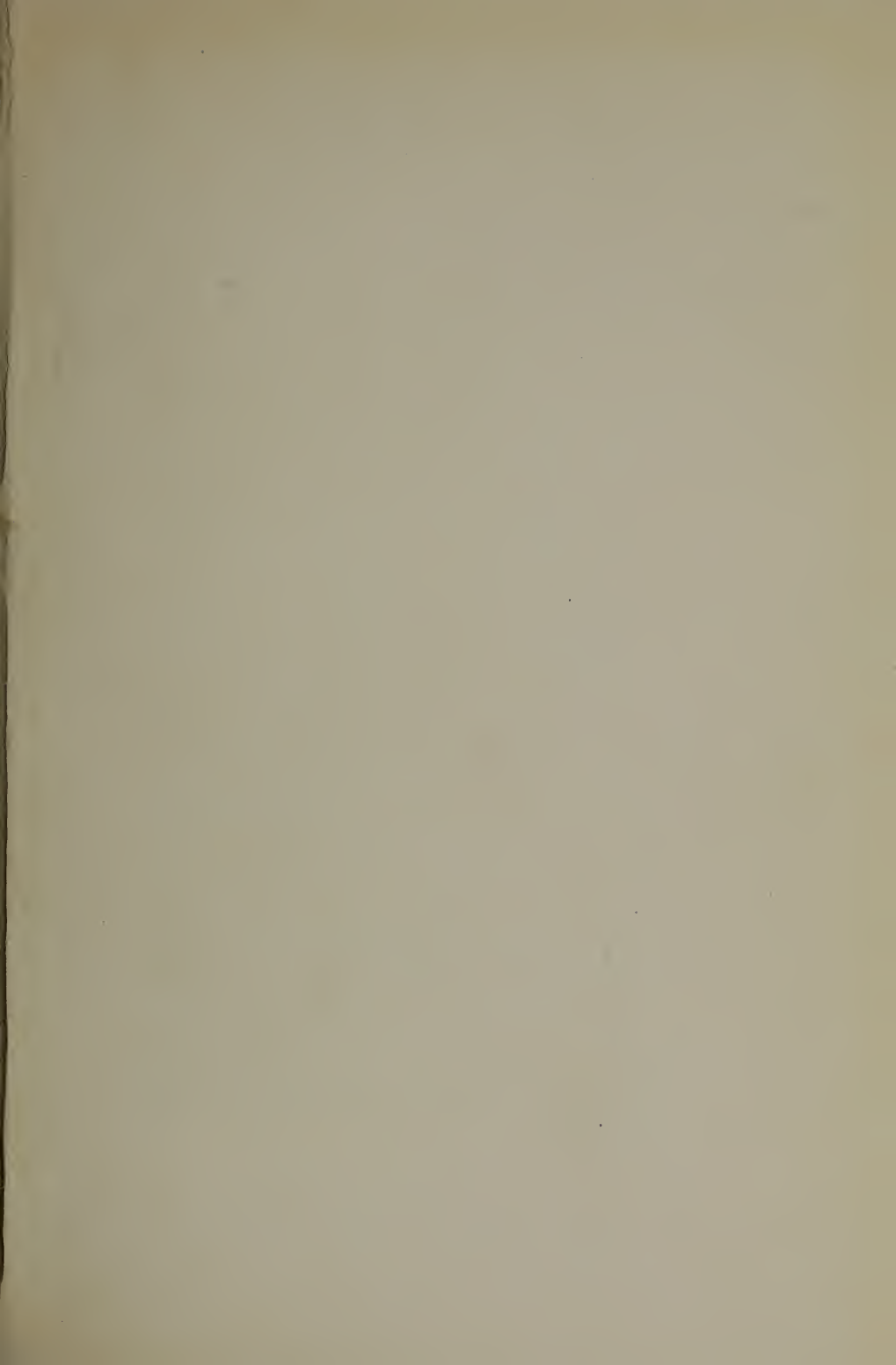
The vacancy on the Board of Trustees caused by Mr. Cumnock's death was filled through the appointment, by the Governor, of Mr. Charles F. Young, treasurer of the Tremont & Suffolk Mills, and former member of the corporation known as the Trustees of the Lowell Textile School. At the last meeting of the Board of Trustees Mr. Arthur G. Pollard, formerly vice-chairman of the Board and a member since the establishment of the school, was elected to the position of chairman. Mr. Royal P. White, a graduate from this school in the class of 1904, was elected vice-chairman.

The commencement of the school year 1919-20 brought the largest enrollment in all day classes that has been known since the establishment of the school. The freshman class of over 110 marks a record and has taxed our accommodations as never before. Upper classes are of increased size, due to the return of former students who were in the service and to men from other colleges and technical schools. This increase has required additions to the instructing staff, and with the changes due to resignations during the summer, several new instructors are found listed on the roster.

In the Cotton Yarn Department Mr. Gilbert R. Merrill, B.T.E., a graduate of this school, class of 1919, was appointed instructor in yarns and knitting. Recently Mr. Arthur J. Woodbury of the Lawrence Manufacturing Company joined the staff of this department as instructor in yarns and knitting. To the staff in the Wool Yarn Department has been added Mr. Gustave Seynave as a part-time instructor in wool sorting. The increased size of classes in the Design and Weaving Department has required additional instructors in the persons of Mr. Albert G. Sugden and Miss E. Elizabeth Whitney. The former is a graduate from our evening classes in design and finishing, and the latter has been for a number of years instructor in free-hand drawing in our evening classes. Just before the opening of the day school Mr. Robert R. Sleeper, L. T. S., 1900, for the past thirteen years instructor in dyeing, resigned to accept a more attractive position, and his place was filled by Mr. Arne K. Gyzander, L. T. S., 1909, who until recently has been with the National Chemical and Aniline Company. The resignation of Mr. Wendell H. Kayser and Mr. James A. Tuck in the Engineering Department came during the summer, and by the opening of the school term their positions were filled by Mr. Philip O. Yeaton, S.B., a graduate from the Massachusetts In-

stitute of Technology, class of 1917, and Mr. Harry C. Brown, S.B., of Brown University. The former has the subjects of steam engineering and mill engineering, and the latter has the subjects of mathematics and mechanics. Recently the staff of this department has been increased by the addition of Mr. F. Alexander Magoun as instructor in mechanical drawing. To the Department of Languages and History has come Mr. James G. Dow, A.B., graduate from Boston University, as an instructor in English and French.

Besides these necessary additions to the instructing staff certain changes in the physical internal arrangement of the buildings have been required to provide for the larger school. Notably is this true of the second floor of Kitson Hall, which was, during the S. A. T. C. period, used as a barracks, but which has this year been utilized in part as a drawing room and office rooms for instructors. With a contemplated partition to be put in place before the next school year, this space will be made available to a greater extent, and will assist in accommodating the larger school of next year.





General View of School, Merrimack River.

BULLETIN

OF THE

Lowell Textile School

LOWELL, MASS.

Issued Quarterly

1920-1921

Entered August 26, 1902, at Lowell, Mass., as second-class matter
under Act of Congress of July 16, 1894
Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3,
1917, authorized October 21, 1918

Moody Street and Colonial Avenue

BOSTON
WRIGHT & POTTER PRINTING CO., STATE PRINTERS
32 DERNE STREET

1920

1919.	1920.	1921.
JULY.	JANUARY.	JANUARY.
S M T W T F S	S M T W T F S	S M T W T F S
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31
SEPTEMBER.	MARCH.	MARCH.
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DECEMBER.	JUNE.	JUNE.
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CALENDAR.

1919.

September 9-10
 September 22-26
 September 29
 September 30
 October 13
 November 26

December 1
 December 19

1920.

January 5
 January 26
 February 7
 February 9
 February 23
 April 16

April 20
 May 24
 May 31
 June 4
 June 15-16

Entrance examinations.
 Re-examinations.
 Registration.
 Opening of day school.
 Columbus Day, a holiday.
 School closes at 12.45 P.M.

THANKSGIVING RECESS.

School opens at 8.45 A.M.
 School closes at 12.45 P.M.

CHRISTMAS VACATION.

School opens at 8.45 A.M.
 Semi-annual examinations begin.
 End of first term.
 Opening of second term.
 Washington's Birthday, a holiday.
 School closes at 4.30 P.M.

SPRING RECESS.

School opens at 8.45 A.M.
 Final examinations.
 Memorial Day, a holiday.
 Graduation.
 Entrance examinations.

1920.

September 14-15
 September 20-24
 September 27
 September 28
 October 12
 November 24

November 29
 December 23

1921.

January 3
 January 24
 February 5
 February 7
 February 22
 April 15

April 20
 May 23
 May 30
 June 3
 June 14-15

TRUSTEES OF THE LOWELL TEXTILE SCHOOL.

Officers.

ARTHUR G. POLLARD, *Chairman.*
 ROYAL P. WHITE, *Vice-Chairman.* CHARLES H. EAMES, *Clerk.*

Trustees.

On the part of the Commonwealth of Massachusetts.
 Dr. PATSON SMITH, Commissioner of Education.

On the part of the city of Lowell.
 Hon. PERRY D. THOMPSON, Mayor of Lowell.

FOR TERM ENDING JUNE 30, 1920.

GEORGE H. SAYWARD, Winchester, Treasurer, Pemberton Company, Boston Corporation, mills at Lawrence.
 FREDERICK A. FLATHER, Lowell, Treasurer, Boott Mills, Boston corporation, mills at Lowell.
 WILLIAM M. WOOD, Andover, President, American Woolen Company, Boston office, mills at Lawrence, Blackstone, West Fitchburg, Maynard, Lowell, Plymouth, Webster, Franklin, Uxbridge.
 HENRY A. BODWELL, Andover, Superintendent, Smith and Dove Manufacturing Company, class of 1900.
 EDWARD M. ABBOT, Graniteville, Vice-President and Agent, Abbot Worsted Company, class of 1904.

FOR TERM ENDING JUNE 30, 1921.

ARTHUR G. POLLARD, Lowell, President, Lowell Hosiery Company.
 GEORGE E. KUNHARDT, Lawrence and New York, Woolen Manufacturer.
 ROYAL P. WHITE, Lowell, Agent, Stirling Mills, class of 1904.
 HERBERT WATERHOUSE, North Chelmsford.
 CHARLES F. YOUNG, Lowell, Treasurer, Tremont and Suffolk Mills, Boston corporation, mills at Lowell.

FOR TERM ENDING JUNE 30, 1922.

WILLIAM R. MOORHOUSE, Boston, Color Chemist, Cassella Color Company, class of 1901.
 HUGH J. MOLLOY, Lowell, Superintendent of Public Schools.
 WILLIAM A. MITCHELL, Lowell, Agent, Massachusetts Cotton Mills, Boston Corporation, mills at Lowell.
 T. ELLIS RAMSDELL, Housatonic, Agent, Monument Mills, class of 1902.
 THOMAS T. CLARK, Treasurer, Talbot Mills, North Billerica, Mass.

General Committees.

FINANCE COMMITTEE.

ARTHUR G. POLLARD.
FREDERICK A. FLATHER.

ROYAL P. WHITE.
CHARLES F. YOUNG.

COTTON AND KNITTING.

FREDERICK A. FLATHER.

GEORGE H. SAYWARD.

T. ELLIS RAMSDELL.

WOOLEN AND WORSTED.

HENRY A. BODWELL.

GEORGE E. KUNHARDT.

HERBERT WATERHOUSE.

CHEMISTRY AND DYEING.

WILLIAM R. MOORHOUSE.

EDWARD M. ABBOT.

WILLIAM A. MITCHELL.

DESIGNING AND FINISHING.

GEORGE E. KUNHARDT.

THOMAS T. CLARK.

ROYAL P. WHITE.

ENGINEERING.

WILLIAM A. MITCHELL.

HENRY A. BODWELL.

FREDERICK A. FLATHER.

ATHLETICS.

ROYAL P. WHITE.

EDWARD M. ABBOT.

WILLIAM R. MOORHOUSE.

EVENING SCHOOL.

HUGH J. MOLLOY.

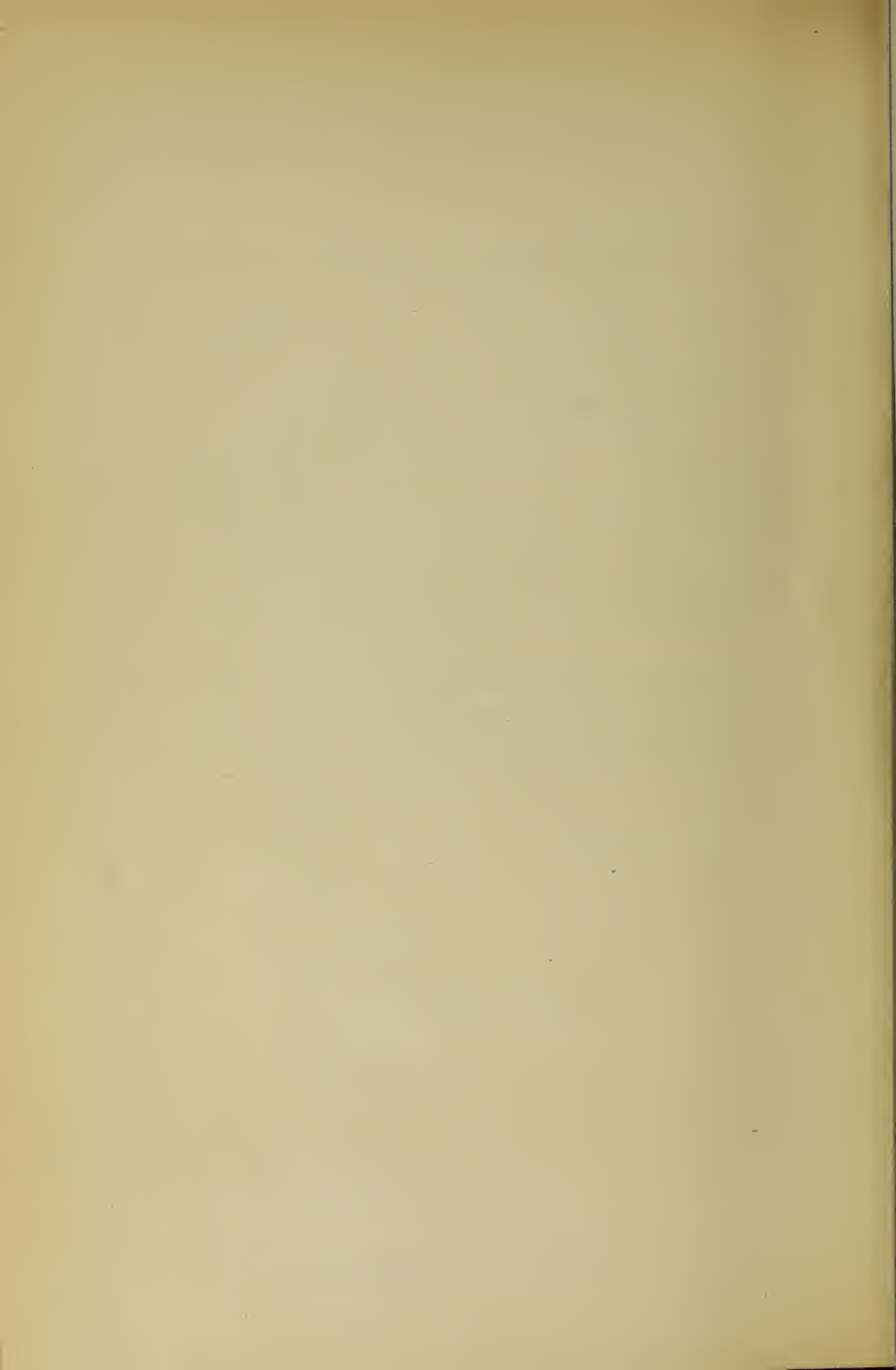
WILLIAM A. MITCHELL.

PERRY D. THOMPSON.

OFFICERS OF INSTRUCTION AND ADMINISTRATION.

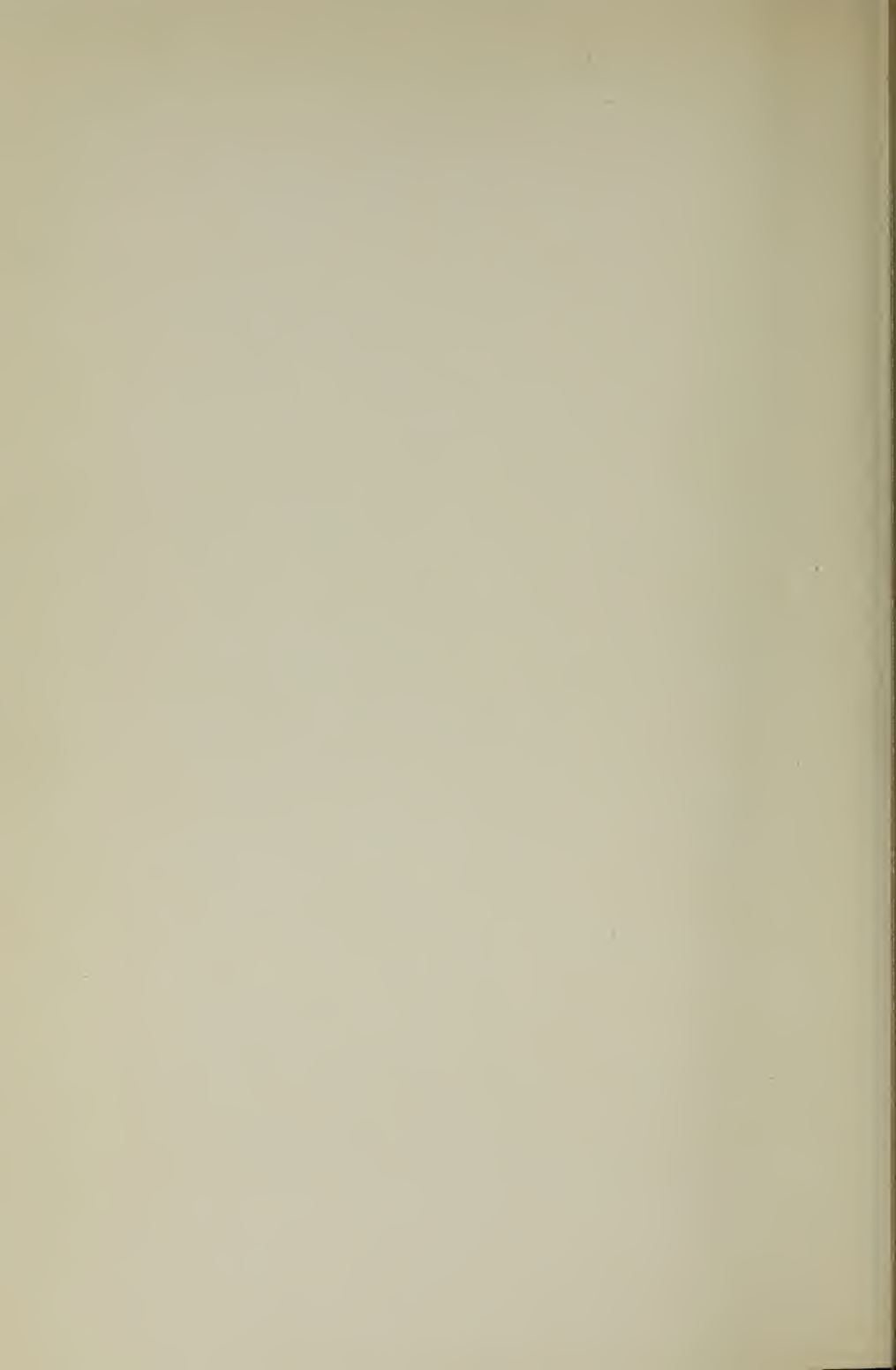
CHARLES HOLMES EAMES, S.B.,	Billerica.
President.	
LOUIS ATWELL OLNEY, S.B., M.S.,	118 Riverside Street.
Professor of Chemistry; in charge of Department of Chemistry and Dyeing.	
EDGAR HARRISON BARKER,	9 Mount Hope Street.
In charge of Department of Woolen and Worsted Yarns.	
ARTHUR ANDREW STEWART,	12 Chester Street.
In charge of Department of Finishing.	
STEPHEN EATON SMITH,	409 Lowell Street, Methuen.
In charge of Department of Cotton Yarns and Knitting.	
HERMANN HENRY BACHMANN,	1190 Middlesex Street.
In charge of Department of Textile Design and Power Weaving.	
LESTER HOWARD CUSHING, A.B.,	12 Harris Avenue.
Secretary of the Faculty; in charge of Department of Languages, History and Economics.	
HERBERT JAMES BALL, S.B., B.C.S.,	119 Wentworth Avenue.
In charge of Department of Textile Engineering.	
ULYSSES JOHN LUPIEN, S.B.,	Chelmsford.
Associate Head Instructor in Mathematics, Physics and Electrical Engineering.	
STEWART MACKAY,	North Chelmsford.
Instructor in Textile Design and Cloth Analysis.	
CHARLES HARRISON JACK,	R. F. D. No. 3, Nashua, N. H.
Instructor in Machine-shop Practice.	
JOHN CHARLES LOWE,	29 Gill Avenue, Methuen.
Instructor in Woolen and Worsted Yarns.	
CORNELIUS LEONARD GLEN,	123 White Street.
Instructor in Finishing.	
MARTIN JOHN HOELLRICH,	30 Saxonia Avenue, Lawrence.
Instructor in Weaving.	
ARTHUR KIMBAL JOHNSON, S.B.,	86 Stevens Street.
Instructor in Chemistry.	
EDWARD KNEVALS HULL,	15 Queensbury Street, Boston.
Instructor in Mechanical Drawing.	
ELMER EDWARD FICKETT, B.S.,	304 Thorndike Chambers.
Instructor in Quantitative Analysis.	
_____,	
Instructor in General Chemistry and Qualitative Analysis.	
FREDERICK STEERE BEATTIE, Ph.B.,	17 Osgood Street.
Instructor in Organic Chemistry.	
HARTMAN FRANK SCHMIDT,	1 Rhodora Street.
Instructor in Woolen and Worsted Yarns.	
ARNE KOLTHOFF GYZANDER,	14 Oakland Street.
Instructor in Dyeing.	
PHILIP OSBORNE YEATON, S.B.,	112 Mount Washington Street.
Instructor in Mechanical Engineering.	
HARRY CHAMBERLAIN BROWN, S.B.,	272 Merrimack Street.
Instructor in Mechanical Engineering.	
JAMES GUTHRIE DOW, A.B.,	149 B Street.
Instructor in Languages.	
FREDERICK ALEXANDER MAGOUN, S.B.,	123 Massachusetts Avenue, Arlington.
Instructor in Mechanical Drawing and Mathematics.	

GILBERT ROSCOE MERRILL, B.T.E., Instructor in Cotton Yarns and Knitting.	96 Dingwell Street.
ALBERT GREAVES SUGDEN, Instructor in Weaving.	33 Washington Street.
ARTHUR JOSEPH WOODBURY, Instructor in Cotton Yarns.	44 Osgood Street.
HOWARD DEXTER SMITH, Ph.D., Evening Instructor in General Chemistry.	669 Westford Street.
EMMA ELIZABETH WHITNEY, Evening Instructor in Freehand Drawing.	50 Standish Street.
EDITH CLARA MERCHANT, Evening Instructor in Freehand Drawing.	268 Westford Street.
HAMAZASB DER MANUELIAN, S.B., Evening Instructor in Mathematics.	355 High Street.
FORREST ALBERT MILLS, Evening Instructor in Machine Shop.	6 Gold Street.
WALTER BALLARD HOLT, Bursar.	18 Mount Vernon Street.
AGNES LOUISE TAISEY, Registrar.	41 Putnam Avenue.
FLORENCE MOORE LANCEY, Librarian.	46 Victoria Street.
HELEN GRAY FLACK, Secretary.	445 Stevens Street.
GLADYS PEARL BRADEN, Store-room Clerk.	77 Woodward Avenue.
AI EDWIN WELLS, Student Assistant in Textile Engineering Department.	178 Perry Street.
MERRILL GEORGE MORRIS, Student Assistant in Chemistry and Dyeing Department.	644 Varnum Avenue.
WALTER WELLINGTON POWERS, Student Assistant in Chemistry and Dyeing Department.	28 Mount Washington Street.





Decorative Art.



THE LOWELL TEXTILE SCHOOL.

HISTORY. — The Lowell Textile School was established by the Trustees of the Lowell Textile School of Lowell, Massachusetts, incorporated in accordance with chapter 475, Acts of 1895. The movement for the establishment of the school dates from June 1, 1891, but it was not opened for instruction until February 1, 1897.

In accordance with the acts of incorporation the Board of Trustees consisted of twenty permanent and self-perpetuating members, three-fourths of whom must be "actively engaged in, or connected with, textile or kindred manufactures." In addition, His Honor the Lieutenant-Governor, the Commissioner of Education of the State, the mayor, the president of the municipal council, the superintendent of schools of Lowell, and a representative of the textile council were members *ex officio*. Legislative acts of 1905 and 1906 authorized the graduates of the school to elect four trustees serving for periods of four years each.

By virtue of the anti-aid amendment to the State Constitution, and by chapter 274, General Acts of 1918, the property of the school was transferred on July 1, 1918, to the Commonwealth of Massachusetts, and the control and management of the school was vested in a Board of Trustees appointed by the Governor, "with all the powers, rights and privileges and subject to all the duties" of the original Board.

OBJECT. — The object of the establishment of the school as set forth in the original act was "for the purpose of instruction in the theory and practical art of textile and kindred branches of industry."

The plan was occasioned by the apparent crisis in the leading industry of New England, due to the rapid development of the manufacture of the coarser cotton fabrics in the southern States. It was believed that this crisis could be met only by a wider and more thorough application of the sciences and arts in the production of finer and more varied fabrics.

Following the general methods and systems found successful at the higher polytechnic institutes, it offers thorough instruction in principles of the sciences and arts applicable to textile and kindred branches of industry. The courses treat not only of the theory but also the application of these principles in the processes, on the machines and throughout all departments of industry involved in the successful manufacture, application and distribution of textile material in any form.

Because of the breadth, grade and character of instruction given, and because of the standing and personnel of the instructing staff, the school has been placed by both Federal and State educational boards in the class of the higher technological schools of this country.

Though from the first the management has kept in view the clearly defined objective which called for the establishment of the school, to meet the needs of the textile and kindred industries, it has developed its curriculum, its

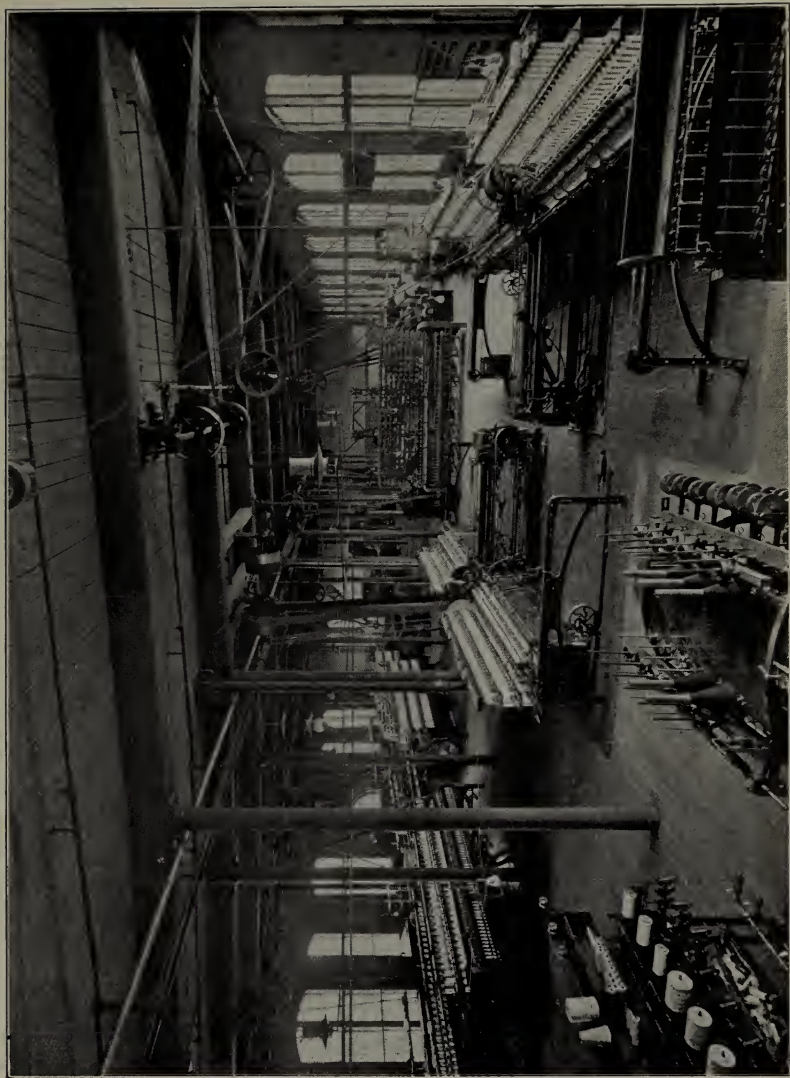
methods of instruction, and equipment as those needs arose. This objective will be kept constantly in view, and as new demands are presented an effort will be made to extend courses, equipment and floor space. The mechanical equipment of the school includes the best makes of textile machinery, and these machines, while built as they would be for regular work, are, as far as possible, adapted to the experimental work which is of particular value in such an institution as this. There is a more varied equipment in this school than in any other, either in America or Europe, and it is now possible to convert the raw stock into the finished fabric within the school.

The day classes have been organized for those who can devote their entire time for three or more years to the instruction requisite in preparing to enter the textile industries. It has been found necessary to require of all such students educational qualifications equivalent to those given by a regular four-year course of a high school or academy of good standing.

The evening classes are held for about twenty weeks of the year, and are for those who are unable to attend the day courses. These are similar to the day courses, but are aimed especially to meet the needs of students working during the day in the mills and shops. For entrance to these classes an applicant should have the equivalent of a grammar school education. A detailed description of these courses and requirements is given in another Bulletin, which will be sent upon request.

The trustees and faculty of the school confer the degrees of Bachelor of Textile Engineering (B.T.E.) and Bachelor of Textile Chemistry (B.T.C.) upon those students who satisfactorily complete one of the prescribed four-year courses. A diploma is awarded to those who satisfactorily complete one of the three-year courses.

The growth of the school has been constant, as is evident from the fact that when it was opened, February 1, 1897, there were 32 day and 110 evening pupils. The present school year of 1919-20 shows a registration of 282 pupils in the day classes and 907 in the evening classes.



Cotton Yarn Department.



GENERAL INFORMATION.

Preparation.

Particular stress should be laid upon a thorough grounding in mathematics, including algebra, arithmetic and plane geometry, as these form the basis upon which the work of this school rests. While solid geometry is not required at the present time, the student will find a knowledge of this subject very valuable in his subsequent work, and is strongly recommended to include this subject as one of his electives. A preliminary course in science, including physics and chemistry, serves to prepare the student's mind for the higher branches of these subjects and their application, but neither will be considered as the equivalent of the courses in these branches given in the school.

Advanced Standing.

Candidates who may have received previous training in any of the subjects ordinarily taken in the regular course may present themselves for examination as per calendar. If a satisfactory rank be attained they may elect such further work as their preparation will permit.

Registration.

All students are required to register on or before the Monday of the week beginning the school year, and again during the first week of the midyear examination period. For unexcused delay in registration a fee of \$5 will be imposed.

Application Blanks.

A blank form of application for admission may be found at the end of this bulletin. This should be properly filled out by all applicants, whether entering upon certificate from a secondary school or presenting themselves for examination.

Fees.

The fee for the day course is \$150 per year for residents of Massachusetts. For non-residents the fee for all courses is \$200 per year. The fee for students from foreign countries is \$300 per year.

Three-fifths of the fee is charged for a single term. Each term's tuition is payable during the first week of that term. Students failing to make this payment at the specified time will be excused from classes until satisfactory explanation and arrangements for payment can be made. *No bills will be sent.* After payment is made no fee or part thereof can be returned, except by special action of the trustees.

An athletic fee of \$15 is due and payable at the time of the first payment of tuition.

Special students pay, in general, the full fee, but if a course be taken involving attendance at the school during a limited time, application may be made to the president for a reduction.

Students must provide their own books, stationery, tools, etc., and pay for any breakage or damage that they cause. The above fee includes free admission for any day students desiring to attend any of the evening classes in which there is accommodation.

For all first-year students a minimum deposit of \$25 is required to cover the cost of breakage, supplies, and apparatus and chemicals used in the Chemical Laboratory, the unexpended balance to be returned to the student at the end of the year.

For all students in second, third and fourth years taking work in Chemistry and Dyeing Laboratories a deposit of \$25 for the first term and \$25 for the second term is required. Students taking Machine Shop will be required to make a deposit of \$15 at the commencement of each term to cover cost of materials, supplies and breakage. Included in this charge is a kit of tools which is essential to the work, and which becomes the personal property of the student. The unexpended balance will be returned at the end of the year.

Fees are strictly payable in advance, and students whose fees remain unpaid after the above-mentioned dates will not be admitted to classes.

All deposits must be made before students can be admitted for laboratory work.

Examinations.

For first-year students intermediate examinations are held every five weeks, and these serve to inform the student concerning his standing and the progress made.

For students in upper classes informal examinations will be held at the end of the eighth week of each term.

Formal examinations are held at the end of each term.

In general, the examinations cover the work of the preceding term, but at the discretion of the instructor may include work of earlier terms.

Examinations for students conditioned in first-term subjects are held in May, and examinations for students conditioned in the final examinations are held in September following. Students requesting condition examinations at other than scheduled dates will be required to pay \$5 for each examination so taken.

Any student who fails to complete a subject satisfactorily, or to clear a condition at the time appointed, will be required to repeat or drop the subject, and he cannot be admitted to subjects dependent thereon.

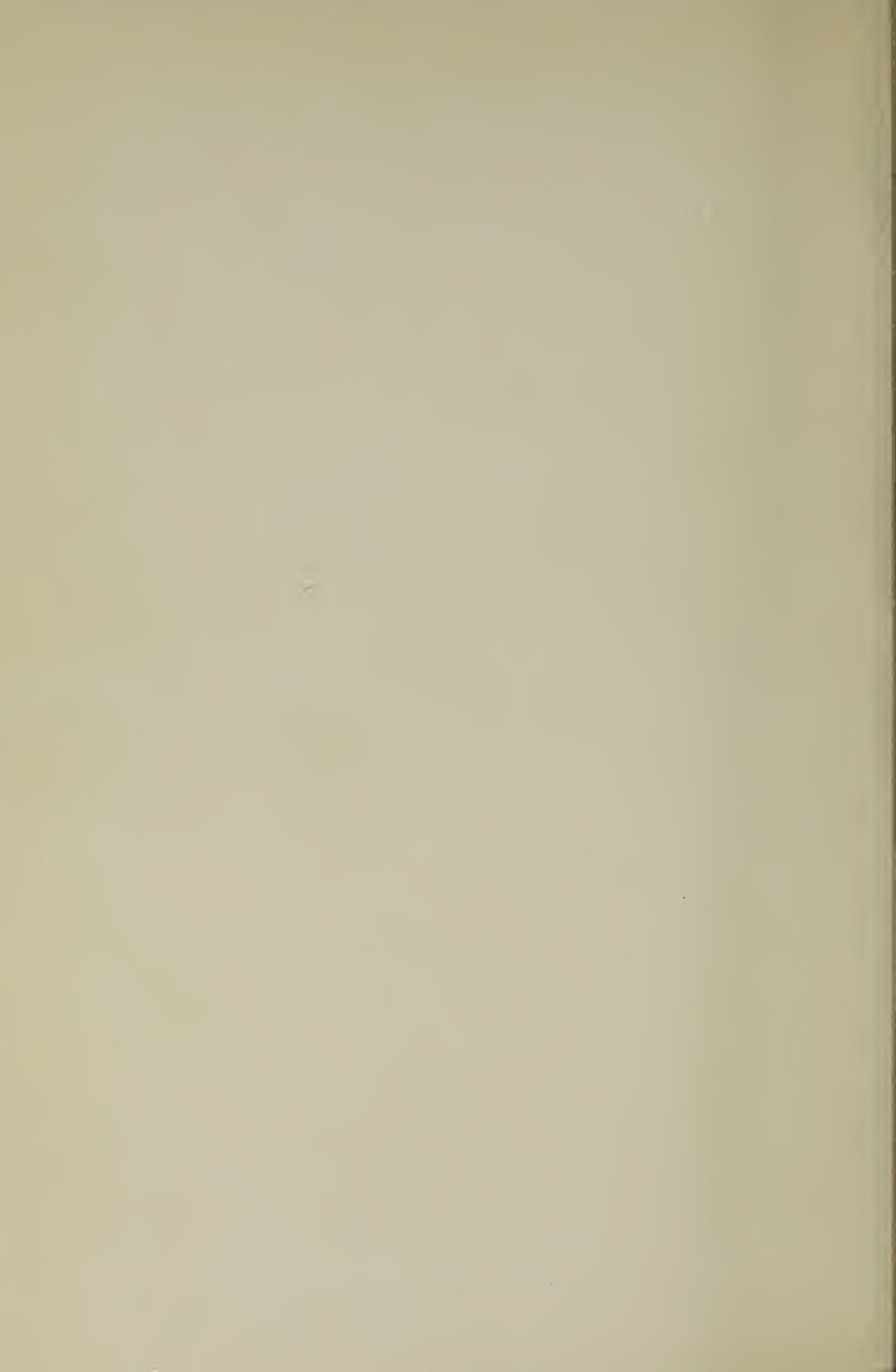
A student whose term's standing is as a whole so low that he cannot continue with profit the work of the next term will be required to leave school, but he may return the following year to repeat such subjects as are required.

Daily work and regularity of attendance are considered in making up the reports of standing.

Continued or persistent absence or tardiness from the classes is considered reason to exclude a student from the class.



Woolen and Worsted Yarn Department.



Records and Reports of Standing.

During each term informal reports are sent to all parents or guardians and to students who are of age; and at the end of each term formal reports are made.

The daily work of the student forms an important part of his record, and no pupil will be awarded the diploma or degree unless this portion of his record is clear.

Books are prescribed for study, for entry of lecture notes and other exercises, and are periodically examined by the lecturers. The care and accuracy with which these books are kept are considered in determining standing.

Thesis.

Each candidate for the degree of the school must file with the head of the department in which the thesis is taken, and not later than May 15, a report of original investigation or research, written on a good quality of paper, 8 by 10 inches, with 1-inch margin at left, and one-half inch at right, of each page; such thesis to have been previously approved by the head of the department in which it is made.

For all candidates for the diploma this requirement will be optional on the part of the school.

Graduate Course.

Graduates of technical courses of other schools are invited to communicate with the president with reference to special courses in the textile studies. Previous training in the sciences and the engineering branches will usually reduce materially the time necessary to complete any of the courses at this school. The advantages offered to such persons for special research work are unexcelled, and a most profitable course may be arranged.

Partial Courses.

While it is assumed that in general every student will pursue some one of the regular courses, it is recognized that there may be some who, because of special vocations or limited time, desire to obtain instruction in certain particular subjects. Facilities and special courses will be provided for such applicants within the limits of schedule arrangements and required preparation. For subjects and preparation see page 38.

Applicant must present satisfactory evidence, by examination or otherwise, that he is qualified to pursue with profit the subjects chosen.

For a number of years the school has had students who have specialized in textile design, decorative art, cloth analysis, weaving and finishing. While no specified limit is given for this course the usual time has been three years. It is expected that a student taking this course will devote all of the regular school session to these subjects, and failure to attend, continued tardiness, lack of application or progress will be considered sufficient reasons to demand his withdrawal from the school.

Special Awards of Merit.

For several years a friend of the school has offered prizes in the form of books to be awarded to the successful candidates on graduation day. The prizes are continued each year. The conditions in detail are as follows:—

First.—Ten dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship in first-year chemistry.

Second.—Five dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship in first-year chemistry.

Third.—Ten dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during his second year.

Fourth.—Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during his second year.

Fifth.—Twenty dollars to the regular student in the Chemistry and Textile Coloring Course who shall present the best thesis preparatory to graduation.

The above-mentioned sums are to be invested in books which may be selected after graduation. In case no one is considered worthy of any particular scholarship prize, or if there is no competition, the same may be withheld. The decision in such case shall rest with the judges.

Degrees.

The degree of Bachelor of Textile Engineering will be awarded for the completion of the four-year course in textile engineering. The degree of Bachelor of Textile Chemistry will be awarded for the completion of the four-year course in chemistry and textile coloring.

Diploma.

For the present the diploma of the school will be awarded upon the satisfactory completion of any one of the regular three-year courses. In cases where students obtain advanced standing, at least one year's attendance is required before the diploma can be obtained.

Medals of Honor.

The National Cotton Manufacturers' Association offers annually a medal to that member of the graduating class who shall have during his course attained the highest standing in the special subjects required by the vote of the association.

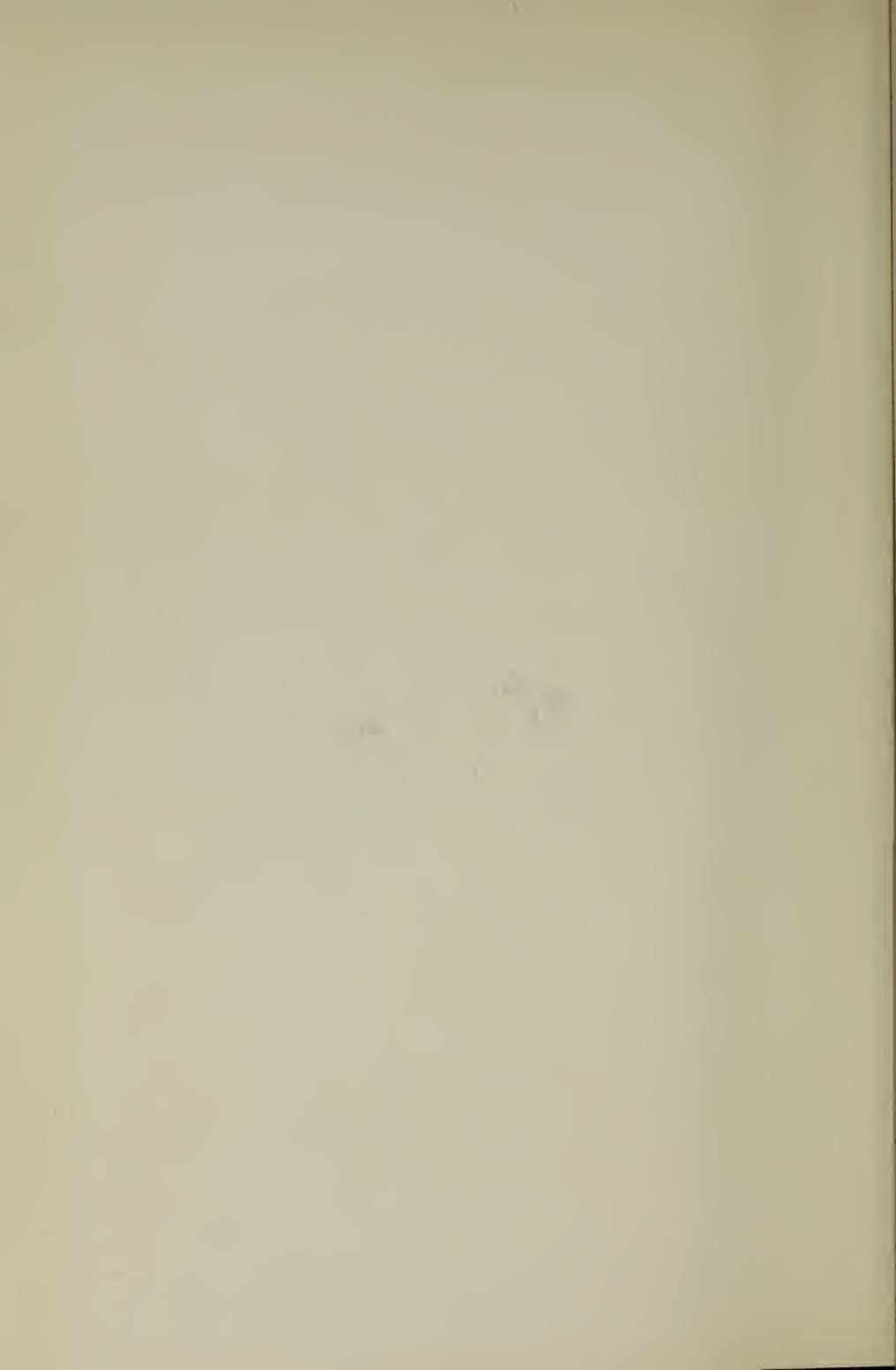
Attendance.

Attendance is required of all regular students at all exercises of their course, and of all special students according to their schedules.

Department heads, together with such instructors as they may appoint to assist, constitute a board of advisers for those students assigned to each. This is for the purpose of following more closely the work of each individual student, and of giving such personal help and assistance as is possible.



Wool Combing.



If a student is absent from any one of his classes twice during a term he is reported to his adviser, and if he is reported a second time he is called before the faculty and a report sent to his parent or guardian. Any occasion for a subsequent report of non-attendance to the adviser from any instructor will be considered sufficient reason for suspension from school.

Conduct.

Students are required to return to the proper place all instruments or apparatus used in experimental work, and to leave all machinery and apparatus with which they may experiment clean and in working order. All breakages, accidents or irregularities of any kind must be reported immediately to the head of the department or instructor in charge.

In case of either day or evening students, irregular attendance, lack of punctuality, neglect of either school or home work, disorderly or ungentlemanly conduct or general insubordination are considered good and sufficient reasons for the immediate suspension of a student, and a report to the trustees for such action as they deem necessary to take.

It is the aim of the trustees so to administer the discipline of the school as to maintain a high standard of integrity and a scrupulous regard for trust. The attempt of any student to present, as his own, work which he has not performed, or to pass any examination by improper means, is regarded by the trustees as a most serious offence, and renders the offender liable to immediate suspension or expulsion. The aiding or abetting of a student in any dishonesty is also held to be a grave breach of discipline.

Any student who violates these provisions will be immediately suspended by the president, and the case reported at the following meeting of the trustees for action.

Library and Reading Room.

That the students may have surroundings conducive to reading and study a moderate-sized reading room with library tables and chairs has been provided. The library shelves contain textile, art, engineering and scientific publications. These are increased from time to time as new technical books of value to textile students are issued from the press. The leading textile papers are kept on file for ready reference.

Sessions.

The regular school sessions are in general from 8.45 A.M. to 12.45 P.M., and from 1.45 to 4.30 P.M., except Saturdays, when there is no session of the school. On Saturday afternoons the buildings are closed.

A tabular view designates the hours at which the various classes meet. This is rigidly adhered to, and the student is marked for his attendance and work as therein scheduled.

Residence and Expenses.

Students from a distance, requiring rooms and board in the city, may, if they desire, select the same from a list which is kept at the school. The cost of rooms and board in a good district is from \$9 per week upwards.

All raw stock and yarn provided by the school, and all the productions of the school, remain, or become, the property of the school, except by special

arrangement; but each student is allowed to retain specimens of yarn or fabrics that he has produced, if mounted and tabulated in accordance with the requirements of the school. It is understood that the school may retain such specimens of students' work as they may determine.

Lockers are provided for the use of the students, sufficiently capacious to contain clothing, books and tools. Special keyless padlocks are provided, and the student is required to make a deposit of 75 cents. At the end of the year 50 cents will be returned if the locker and lock are surrendered in good condition.

No books, instruments or other property of the school are loaned to the students to be removed from the premises except by special permission.

Awards.

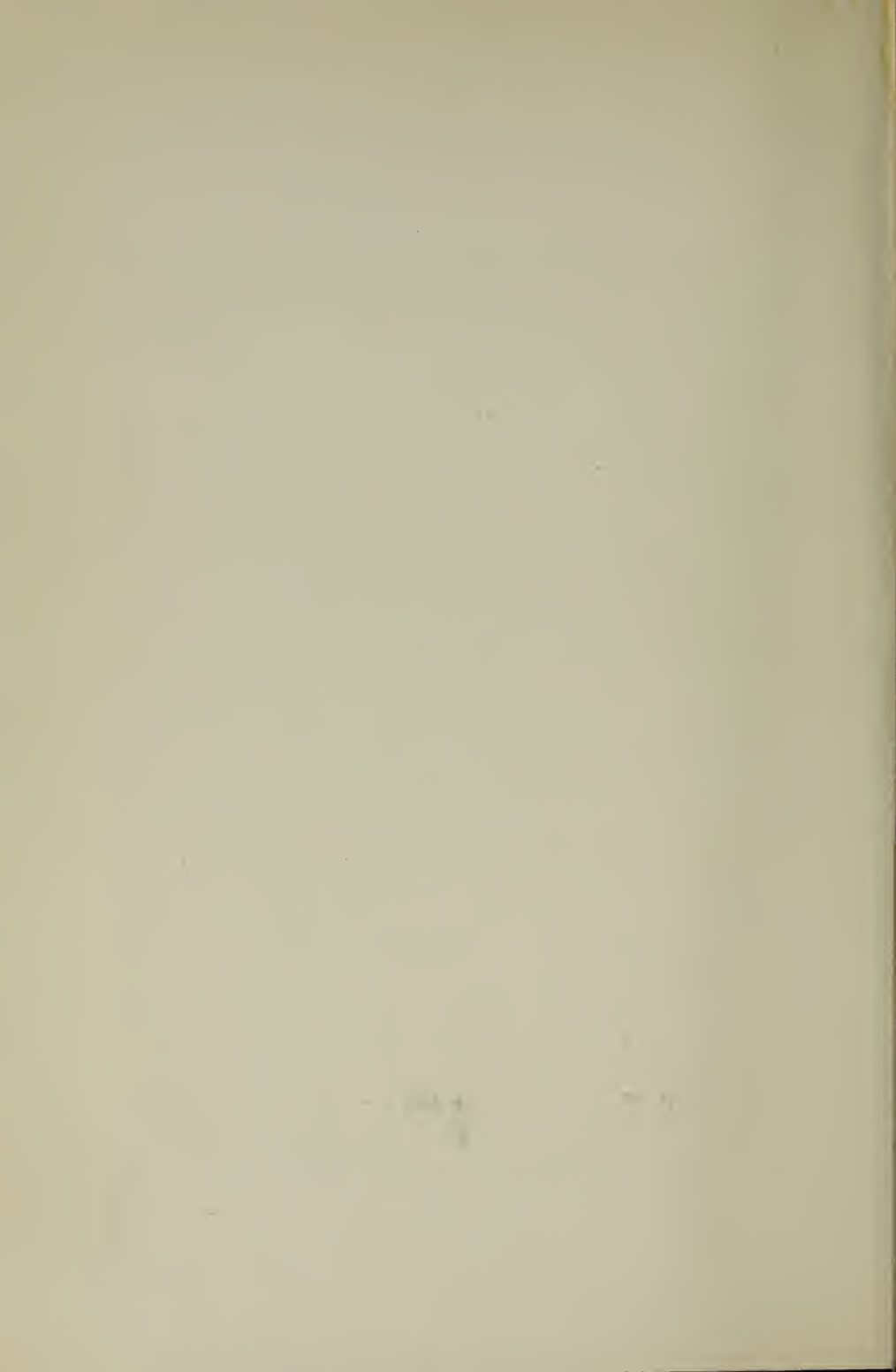
Gold medal, Paris Exposition, 1900, for general excellence. A special medal, Merchants and Manufacturers Exposition, Boston, 1900. The Pan-American medal, awarded to the school, 1901. Gold medal, Louisiana Purchase Exposition, 1904. Gold medal, Lewis and Clark Centennial Exposition, 1905. Medal of honor from Panama-Pacific International Exposition, 1915.

Bulletins and Catalogues.

All students registering and paying the regular fee for the course selected are entitled to the bulletins and catalogues when issued.



Weave Room.



DAY CLASSES.

ENTRANCE REQUIREMENTS.

Degree Courses.

Candidates for admission to either of the degree courses must be graduates of a school approved by the New England College Entrance Certificate Board or by the Board of Regents of New York, and must present a certificate from the principal of the school last attended, reporting upon the subjects pursued and the points obtained according to the schedule of studies given hereafter. A total of fourteen points is required.

A point represents satisfactory work in a year's study in a specified subject in an approved secondary school.

<i>Required Subjects.</i>	<i>Points.</i>
Plane Geometry,	1
Algebra A1,	1½
Algebra A2,	½
Elementary German A (two years) or Elementary French A (two years) }	2
English,	3
History (American, Mediæval and Modern or English),	1
Physics (required in 1921 and thereafter),	1
	—
	10

<i>Elective Subjects.</i>	
Physics (elective in 1920, required in 1921),	1
Chemistry,	1
Solid Geometry,	1
Trigonometry,	½
Mechanical Drawing,	1
Mechanic Arts,	1
History:	
American,	1
Mediæval and Modern,	1
English,	1
Elementary French (two years) or Elementary German (two years) }	2
Advanced French or German (one year in addition to requirements of Elementary French A or Elementary German A),	1
Spanish,	1
English,	1
Latin,	1

An applicant may also be admitted on the basis of entrance examinations, in which case he must pass a sufficient number of the required subjects to make nine points, and present certificates showing satisfactory courses in such of the elective subjects to make five additional points.

The object of the elective requirements is to encourage greater breadth of preparation than that covered by the required branches. Certificates covering other subjects than those listed as elective will be entertained.

Diploma Courses.

Candidates for admission to the diploma courses are accepted upon presentation of properly vouched certificates showing the completion of a regular four-year course in a high school or academy of reputable standing. The certificates must specify that the applicant has satisfactorily passed the necessary subjects.

A total of nine points selected from the following list of subjects is required, and no applicant for a diploma course can be accepted unless he presents in his certificate at least one year of algebra, one year of plane geometry and three years of English. An applicant is advised to complete both Algebra A1 and A2 before entering.

The subject-matter covered should be the same as described under the required subjects for the degree courses, with the exception of German and French, the requirements for which are given specifically under Elementary German B and Elementary French B.

	Points.
Algebra A1,	1½
Algebra A2,	½
Plane Geometry,	1
English (three years),	3
English (additional year),	1
German, Elementary (one year),	1
French, Elementary (one year),	1
History:	
Mediæval and Modern,	1
English,	1
American,	1
Physics (required in 1921 and thereafter),	1

ENTRANCE EXAMINATION.

All students who are unable to present a certificate for either the degree or diploma courses must pass entrance examinations. The examinations for admission to the diploma and degree courses will be held as follows: —

Tuesday, June 15, 1920; Tuesday, September 14, 1920; Tuesday, June 14, 1921: —

Algebra, 9 A.M. to 11 A.M.

History, 11 A.M. to 1 P.M.

English, 2 P.M. to 4 P.M.

Wednesday, June 16, 1920; Wednesday, September 15, 1920; Wednesday, June 15, 1921: —

Plane Geometry, 9 A.M. to 11 A.M.

German or French, 11 A.M. to 1 P.M.

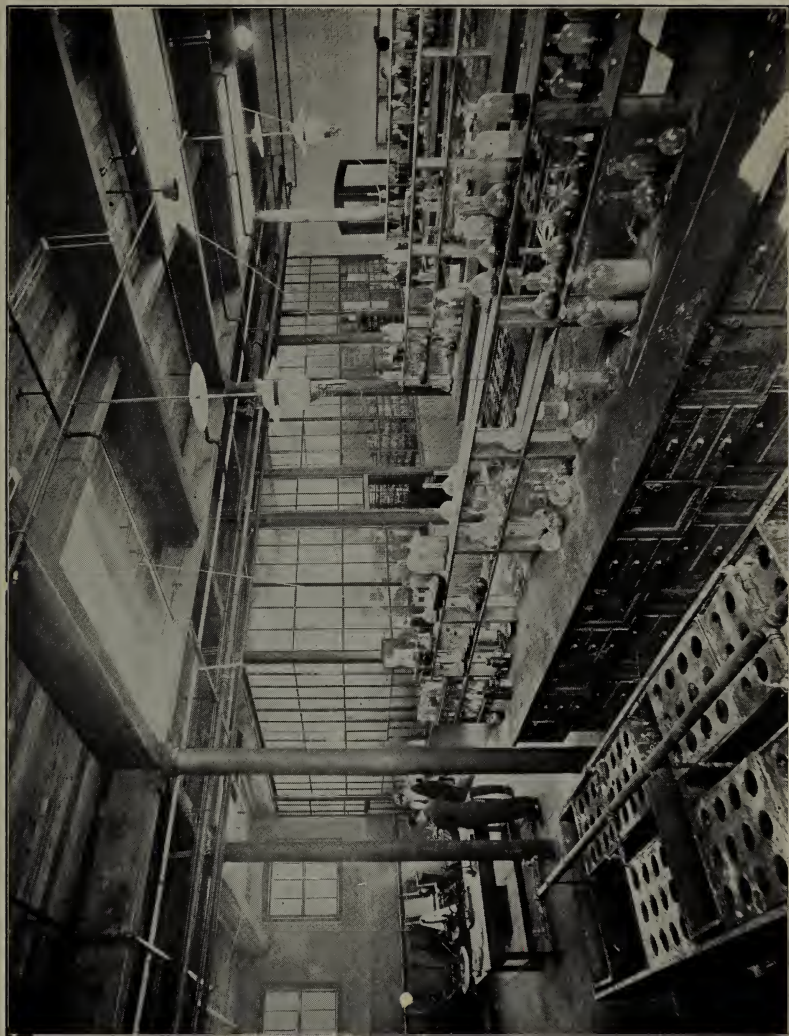
Physics, 2 P.M. to 4 P.M. (in 1921).

Candidates failing to pass the June examinations are allowed to try again in September; those who cannot attend the June examinations may present themselves in September.

REQUIRED SUBJECTS FOR ENTRANCE.

Algebra.

ALGEBRA A1. — Fundamental operations, factoring, determination of the highest common factor and least common multiple, fractions, simple and complex, simple equations of one or more unknown quantities, problems involving linear equations of either numerical or literal quantities, radicals,



Experimental Dyeing Laboratory.



involution and evolution, square and cube root, ratio and proportion, exponents including fractional and negative.

ALGEBRA A2. — Quadratic equations both numerical and literal. Simple problems involving one or more unknown quantities that may be solved by the methods of linear or quadratic equations, binomial theorem for positive integral exponents, problems involving methods of arithmetical and geometrical progressions.

Plane Geometry.

The usual theorems and constructions of good textbooks, including the general properties of plane rectilinear figures, the circle and the measurement of angles, similar polygons, areas, regular polygons, and the measurement of the circle. The solution of original problems and problems in mensuration of lines and plane surfaces.

English.

As secondary schools are following to a greater extent than heretofore the requirements of the College Entrance Examination Board, it is recommended that the applicant to this school conform to the suggestions of this Board relative to English composition and literature.

The examination consists of two parts, both of which are given at the same time.

(a) With the object of testing the student's ability to express his thoughts in writing clearly and correctly he will be required to write upon subjects familiar to him. Emphasis will be laid upon the composition, punctuation, grammar, idiom and formation of paragraphs. He will be judged by how well he writes rather than by how much he writes.

(b) The second part of the examination is prepared with the view of ascertaining the extent of the student's knowledge of good literature, and to test this examination questions will be based on the books adopted by the National Conference on Uniform Entrance Requirements. Any course of equivalent amount if made up of standard works will be accepted.

Modern Languages.

REQUIREMENTS FOR DEGREE COURSES.

It is expected that the work in these subjects has covered a period of at least two years of preparatory school training or the equivalent. Importance should be given to the ability to translate into good idiomatic English, but attention should also be paid to grammar and construction, that greater care may be used in translation.

ELEMENTARY GERMAN A. — The entrance examination is composed of two parts, both taken, however, at the same time.

(a) Translation of simple German prose into good idiomatic English.

(b) Questions to test proficiency in grammar, and simple English sentences to be rendered into German.

The requirements include the declension of articles, adjectives, pronouns and nouns; the conjugation and inflection of weak and strong verbs; the simpler uses of the subjunctive; the use of the modal auxiliaries; the prepositions and their uses; the principal parts of important verbs; and the elementary rules of syntax and word order.

Texts used in the language courses of any reputable high or preparatory

school will furnish reading for translation. A list of texts is offered by the College Entrance Examination Board.

ELEMENTARY FRENCH A. — The entrance examination is composed of two parts, both taken, however, at the same time.

(a) Translation of simple French prose into good idiomatic English.

(b) Questions to test proficiency in grammar, and simple English sentences to be rendered into French.

The requirements include the principal parts, conjugation and inflection of the regular and the more common irregular verbs; the singular and plural forms of nouns and adjectives; the uses of articles and partitive construction; the forms and positions of personal pronouns; and the simpler uses of the conditional and subjunctive.

Suitable texts are suggested by the language courses of any reputable high or preparatory school and by the requirements of the College Entrance Examination Board.

Note. — Students who have pursued two years of elementary French as well as two years of elementary German may present one subject to cover two points in the required subjects, and the other to cover two points in the elective subjects.

REQUIREMENTS FOR DIPLOMA COURSES.

ELEMENTARY FRENCH B. — Applicants who enter for one of the three-year courses may present one year's work in French in a secondary school. Those who present themselves for examination in this subject should be familiar with the rudiments of grammar, and be able to translate simple French prose into good idiomatic English, also to translate into French English sentences based on the French given for translation.

ELEMENTARY GERMAN B. — Applicants who enter for one of the three-year courses may present one year's work in German in a secondary school. What is stated in regard to French applies to those who may present German instead of French.

History.

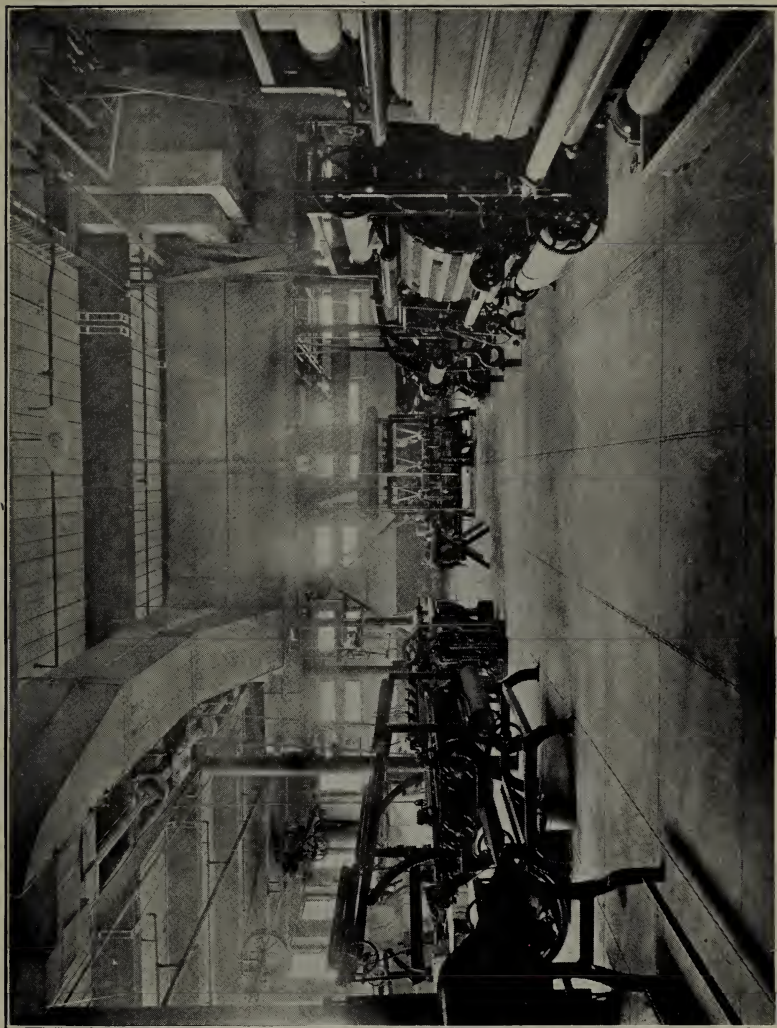
Applicants may offer a preparation of American history, English history or mediæval and modern history.

In American history applicants should be familiar with the early settlements in America, the colonies, their government, the customs of the people, and events which led to the establishment of the United States. They should be informed concerning the causes and effects of the principal wars in which the country has been involved. They should be prepared to consider also questions requiring an elementary knowledge of civil government, as well as historical facts connected with the growth of this country up to the present time.

For the subject of English history or mediæval and modern history the course given in any reputable secondary school should give proper preparation. A course extending over a full year with not less than three periods a week will be accepted.

Physics.

The applicant should be familiar with the fundamental principles of physics, particularly those considered under the headings of mechanics, heat, light, electricity and magnetism. Textbook instructions should be supplemented by lecture table experiments. Wherever possible, the student should pursue a laboratory course, but for the present no applicant will be conditioned in



Finishing Department.



this subject if he has not been able to carry on a laboratory course. Where a laboratory course is offered by a secondary school, it should cover at least twenty-five of those experiments listed in the syllabus of the College Entrance Examination Board. An applicant should present his notebook, together with the certificate from the teacher under whom the work was performed.

ELECTIVE SUBJECTS.

History.

If the applicant can present all three or any two branches of history specified he may include one as a required subject and the others in the list of elective subjects.

Chemistry.

Applicants must show evidence of their familiarity with the rudiments of chemistry. Any course given in a secondary school organized to present instruction by means of textbook or lecture, together with correlated laboratory work, will be considered as covering the requirements. The applicant's notebook with his original notes, including description of experiments, apparatus used, reactions, observations and deductions, must be accompanied by his instructor's certificate.

Importance will be placed upon manipulation and deductions as well as the general appearance and neatness of the notebook.

Solid Geometry.

The usual theorems and constructions of good textbooks, including the relations of planes and lines in space, the properties and measurement of prisms, pyramids, cylinders and cones; the sphere and spherical triangles. The solution of original problems and the applications of the mensuration of surfaces and solids.

Trigonometry.

The usual courses of instruction covered by the standard textbooks on plane and spherical trigonometry will prepare an applicant sufficiently to meet this requirement.

Mechanical Drawing.

The applicant must have pursued such a course in mechanical drawing that he will be familiar with the usual geometrical construction problems, projection of points, lines, planes and simple solids.

Importance is laid not only upon the accuracy with which the work is performed, but upon the general arrangement, appearance and care with which the plates are executed.

It should not be understood that work in this subject may be offered as the equivalent of the first term's work at the school.

Mechanic Arts.

The usual courses offered by properly equipped preparatory schools will be accepted as suitable fulfillment of this requirement. Work should include instruction in the handling of both wood and metal working tools in the more simple practices of these arts.

Advanced French or German.

In cases where applicants have pursued courses in French or German for more than two years, and have completed work which is more advanced than is included under elementary French or German, they may offer the additional year as an elective.

English.

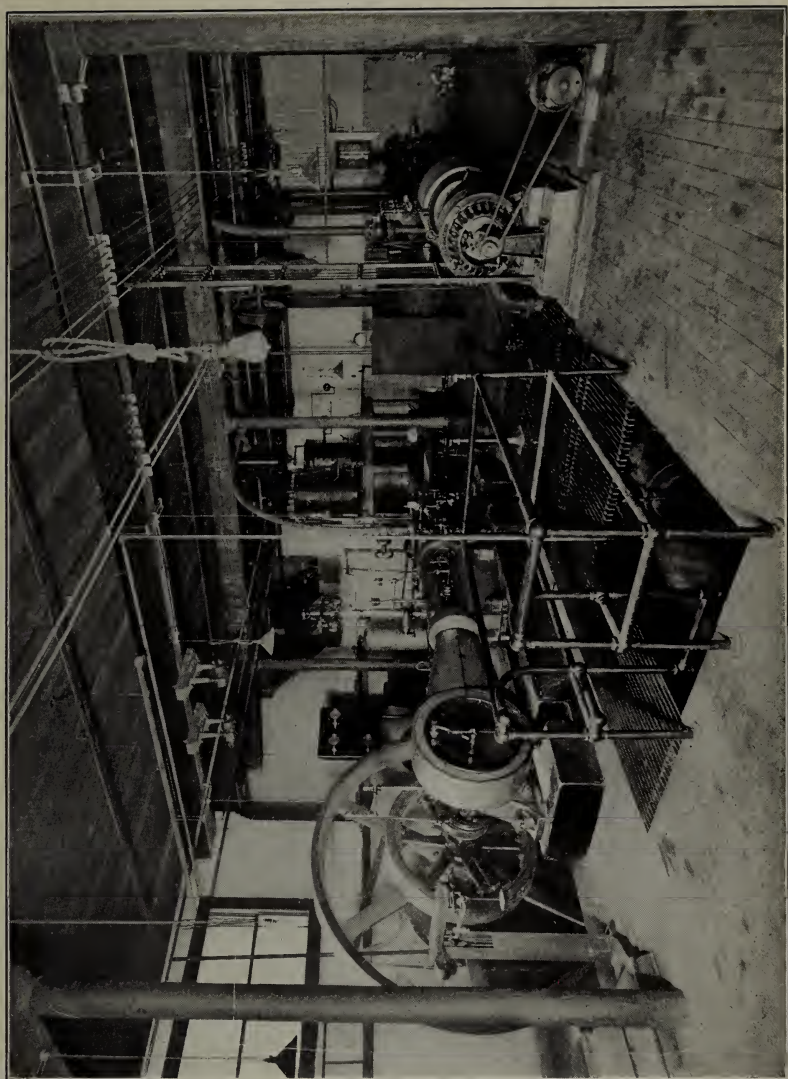
In many secondary schools this subject is required during all of the four years, and where it is pursued to this extent the applicant may offer the additional year's work as one of his elective subjects.

Spanish.

Students offering Spanish should be familiar with elementary grammar, the common irregular verbs, and be able to translate simple Spanish to English or English to Spanish. A preparation equivalent to three periods per week for two years will be acceptable.

Latin.

Students who have pursued one or more years of Latin may present this subject as an elective. Each year's work satisfactorily completed will be considered equal to one point.



Engineering Laboratory.



COURSES OF INSTRUCTION.

Since its establishment the Lowell Textile School has offered courses, each of which extends over a three-year period. With the development of the school and close study of the problems presented to the graduates it has been believed that attention should be given those branches of instruction which would give breadth of training as well as establish fundamental principles. This policy has resulted in extending the curriculum to such length that the need for an additional year's instruction was evident.

The fact was also appreciated that to carry on the more advanced work a better preparation must be demanded of the applicant for entrance.

Nevertheless, it was recognized that many young men seeking employment in the textile industry do not care, or are not in a position, to devote four years to scholastic preparation, and for these the regular three-year courses are offered.

These courses are designated as Cotton Manufacturing, Wool Manufacturing and Textile Design (General Textile Courses).

At the completion of any one of these the regular diploma of the school is awarded.

In general, it is assumed that students pursuing these courses will not take the advanced work of the fourth year. However, if a student electing one of the three-year courses desires to change to one of the four-year courses he may do so providing his preparation and undergraduate standing permits of it.

The four-year courses are Textile Engineering, Chemistry and Textile Coloring. At the completion of these courses the degrees of Bachelor of Textile Engineering (B.T.E.) and Bachelor of Textile Chemistry (B.T.C.) are conferred.

Three options are offered in the Engineering Course, viz., general textile, cotton manufacturing or wool manufacturing. Each of these courses is planned to train one in the fundamental principles of science found to be applicable in the particular fields of textile chemistry and textile engineering. It is maintained that for one to be successful in either of these important branches of industry a training is required as thorough and broad as that of any of the recognized branches of engineering or of applied science.

With this in mind these courses have been built of a secure framework of science and mathematics, and to it has been added the useful application of these branches in the broad textile field. With the direct purpose of laying a secure foundation in the training, a more extended preparatory course is first demanded, and subsequently in the school work more subjects of a general character are included, that narrowness of judgment and observation may not result by overstimulation of the technical development.

COURSES FOR WOMEN.

Although all classes are open to women, the courses which have appealed especially to their tastes have been textile designing and decorative art. Some have pursued courses in chemistry, and have added to their work in design some instruction in power weaving and finishing. These special courses have in general been followed for three years, and in some cases have led the students to positions either in the mill office or in some commercial lines that have been desirable and have offered congenial work.

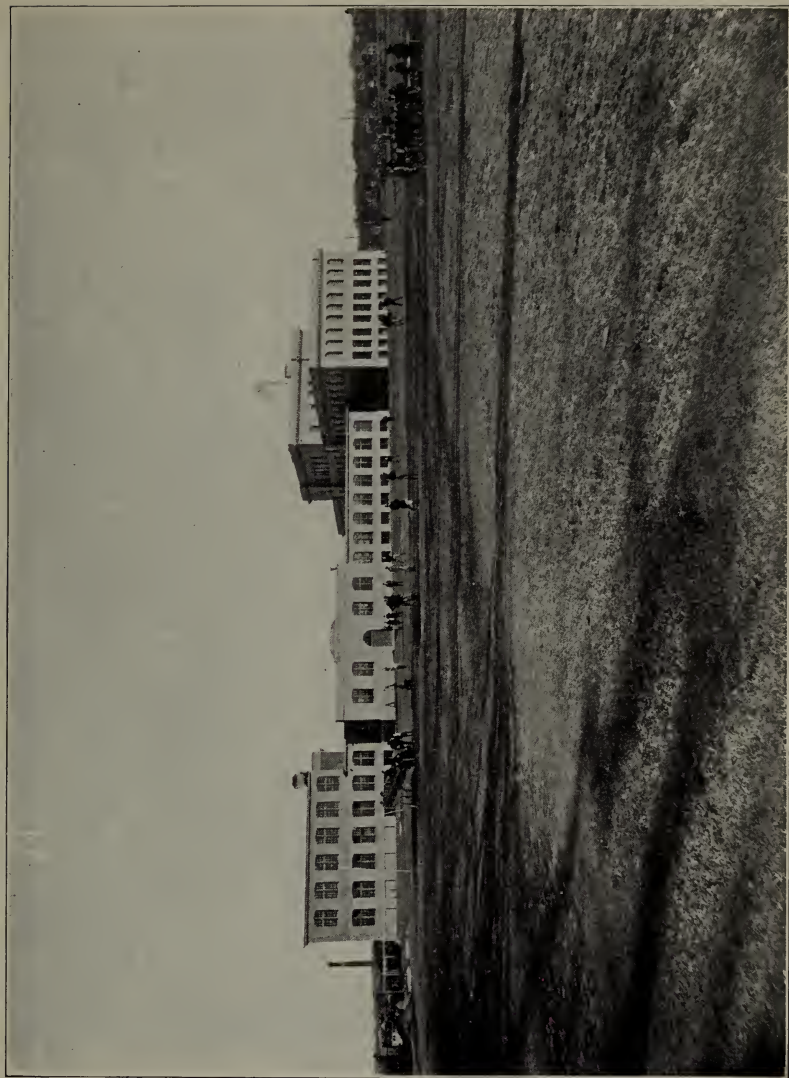
Within the last few years the possibilities for women in certain branches of textile chemistry have become recognized, and it is believed that in the future the positions open to them will become more and more numerous.

GOVERNMENT POSITIONS.

One of the significant and important facts that has been clearly demonstrated during the recent conflict is the great value of a technical education. In no war has the applied science been so forcefully used as a weapon of combat.

An earlier catalogue pointed out the calls that the various departments of the government were making for graduates from this school in common with those of other technological institutions. The success attained by past students has been presented in a previous bulletin. As these men have shown their value to the government in times of war, so will they in times of peace. Before the war various departments of the government had found need for graduates from this textile school, and with the problems of peace the need undoubtedly will become greater.

The United States Civil Service Commission recognizes graduates from the degree courses of this school as proper applicants for the examination to the various positions requiring a knowledge of applied science and engineering, as well as a knowledge of textile manufacturing, in the different departments of the government.



Athletic Field and School Buildings.



COURSES.

In the column headed "Hours of Exercise" the numbers represent for each particular subject the total hours required in school for a period of fifteen weeks.

The letter and number which follow the subjects indicate the department in which the subject is given and the number of the subject in that department. For detailed description of the same, see page 38.

The departments are indicated as follows:—

Textile Engineering,	B	Cotton Yarns,	F
Chemistry and Dyeing,	C	Woolen and Worsted Yarns,	G
Textile Design and Power Weaving,	D	Finishing,	H
Languages and History,	E		

By referring to the letter and number indicated under "Preparation" the student can ascertain what subjects are necessary in order that he may have a clear understanding of the subject which he is scheduled to take.

FIRST YEAR.

First Term.

[Common to all courses.]

	Hours of Exercise.
Mechanics B-3,	60
Mechanical Drawing B-7,	120
Mathematics B-1,	45
Textile Design D-1,	75
Elementary Chemistry C-1,	165
English E-1,	30
Elementary German E-2 or Elementary French E-4,	30

Second Term.

	Course VI-4	Course IV-4
Mechanism B-3,	60	60
Mechanical Drawing B-8 and B-9,	105	30
Mechanical Laboratory B-6,	30	—
Mathematics B-1,	45	45
Textile Design D-1,	60	30
Elementary Chemistry C-1,	75	75
Technology of Fibers F-1 and G-1,	60	60
English E-1,	30	30
Elementary German E-2 or Elementary French E-4,	30	30
Machine Shop B-15,	30	—
Qualitative Analysis C-2,	—	135
Stoichiometry C-3,	—	30

For second-term subjects in Courses I., II. and III., see pages 27, 29, 31.

Course I. — Cotton Manufacturing.

The Cotton Manufacturing Course is designed for students contemplating a career in the manufacturing of cotton yarns and cloth or allied industries, and wishing to devote but three years to the school work.

During the first term the studies are common to all courses, and include instruction in mechanism, mathematics, mechanical drawing, textile design and elementary chemistry. Laboratory work supplements the lectures in chemistry, and hand-loom weaving assists in illustrating the principles of textile design. At the commencement of the second term instruction in the preliminary processes of yarn manufacturing is given in the course of technology of fibers.

The work in the Cotton Yarn Department comprises instruction in all the manufacturing processes from the bale to the finished yarn. The instruction is given by means of lectures upon the machines and processes, and by laboratory work upon the machines themselves. In the laboratory each student is required to make exhaustive tests upon each machine, and to make as many settings and adjustments as possible. The third year's work in this department is largely devoted to lectures upon the manufacture of specialties, waste products, etc., and special laboratory work, special tests upon yarns and fabrics, mill planning with regard to the arrangement of machinery, and other work of an advanced nature.

The course in chemistry consists of lecture and laboratory work on inorganic and organic chemistry, followed by a lecture course of instruction in textile chemistry and dyeing.

The work in mechanism serves as a basis for all future machine and mechanical work, and is followed by steam engineering, electricity and mill engineering. The mechanical drawing taken in connection with these subjects augments this instruction as well as provides opportunity for students to become skilled in drafting.

The course in textile designing, cloth analysis and cloth construction includes lectures on plain and fancy weaves and Jacquard work, the analysis of all commercial fabrics, and designs for the same. During the third year of this course students in this department specialize on cotton fabrics.

Power weaving is taken up during the second and third years. Commencing with lectures and practice upon plain looms, the student is taken through dobby and box-loom weaving and Jacquards.

A course in knitting taken during the third year includes the manufacture of hosiery and underwear. The course on the finishing of cotton fabrics is given by lectures and laboratory work, and requires considerable work on standard machine in the laboratory.

For detailed description of the subjects see page 38.

Course I. — Cotton Manufacturing.

[For first term see page 25.]

FIRST YEAR.

Second Term.

	Hours of Exercise.		Hours of Exercise.
Mechanism B-3,	60	Elementary Chemistry C-1,	75
Mechanical Drawing B-8,	75	Elementary German E-2 or }	30
Mathematics B-1,	45	Elementary French E-4, }	30
Textile Design D-1,	150	English E-1,	30
Technology of Fibers F-1,	60		

SECOND YEAR.

First Term.

Cotton Yarn Manufacture F-1,	240	Machine Drawing B-10,	30
Textile Design D-2,	75	Steam Engineering B-12,	45
Power Weaving D-9,	45	Physics B-11,	45
Textile Chemistry and Dyeing Lectures C-9,	30	Industrial History E-6,	15

Second Term.

Cotton Yarn Manufacture F-1,	210	Steam Engineering B-12,	15
Textile Design D-2,	60	Machine Drawing B-10,	45
Power Weaving D-9,	90	Strength of Materials B-17,	30
Textile Chemistry and Dyeing Lectures C-9,	15	Physics B-11,	45
		Industrial History E-6,	15

THIRD YEAR.

First Term.

Cotton Yarn Manufacture F-1,	210	Power Weaving D-10,	105
Knitting F-2,	30	Cotton Finishing H-2,	75
Textile Design, Cloth Construction, D-6, 7,	45	Electricity B-19,	30
		Mill Engineering B-21,	30

Second Term.

Cotton Yarn Manufacture F-1,	210	Mill Engineering B-21,	45
Knitting F-2,	45	Power Weaving D-10,	90
Textile Design, Cloth Construction, D-6, 7,	45	Cotton Finishing H-2,	75
		Thesis.	

Course II. — Wool Manufacturing.

The course on wool manufacturing is arranged for those who contemplate a career in the manufacture of woollen or worsted fabrics, and can devote but three years to the school work. It includes instruction on all of the varied processes employed in manipulating the wool fiber to produce yarn and cloth, namely, sorting, scouring, carding, combing, spinning, designing, weaving, dyeing and finishing. The work is carried on by lectures, recitations and practical work in the laboratories.

Following the first term of the first year, which is common to all courses, the student in the course in technology of fibers is acquainted not only with the various kinds of wool and trade terms applied to them, but also with other commercial fibers, viz., cotton, silk, jute, hemp, flax, etc., used in the textile industry. He is at the same time taught the application of these fibers and the general processes of manufacturing each into a yarn.

Beginning with the second year the details of manipulating wool from the grease to the finished yarn is taken up for close study. This includes the spinning of woollen yarn, also worsted yarn, by both the English and the French systems. The intermediate processes of sorting, scouring, carding, combing and top-manufacturing are taken in detail and in proper sequence.

The general chemistry of the first year is followed by a lecture course in the second year on textile chemistry and dyeing.

Textile design, cloth analysis and construction are continued from the first year throughout the course, the work being applied especially to woollen and worsted goods. Weaving on power looms commences in the second year and continues through the third.

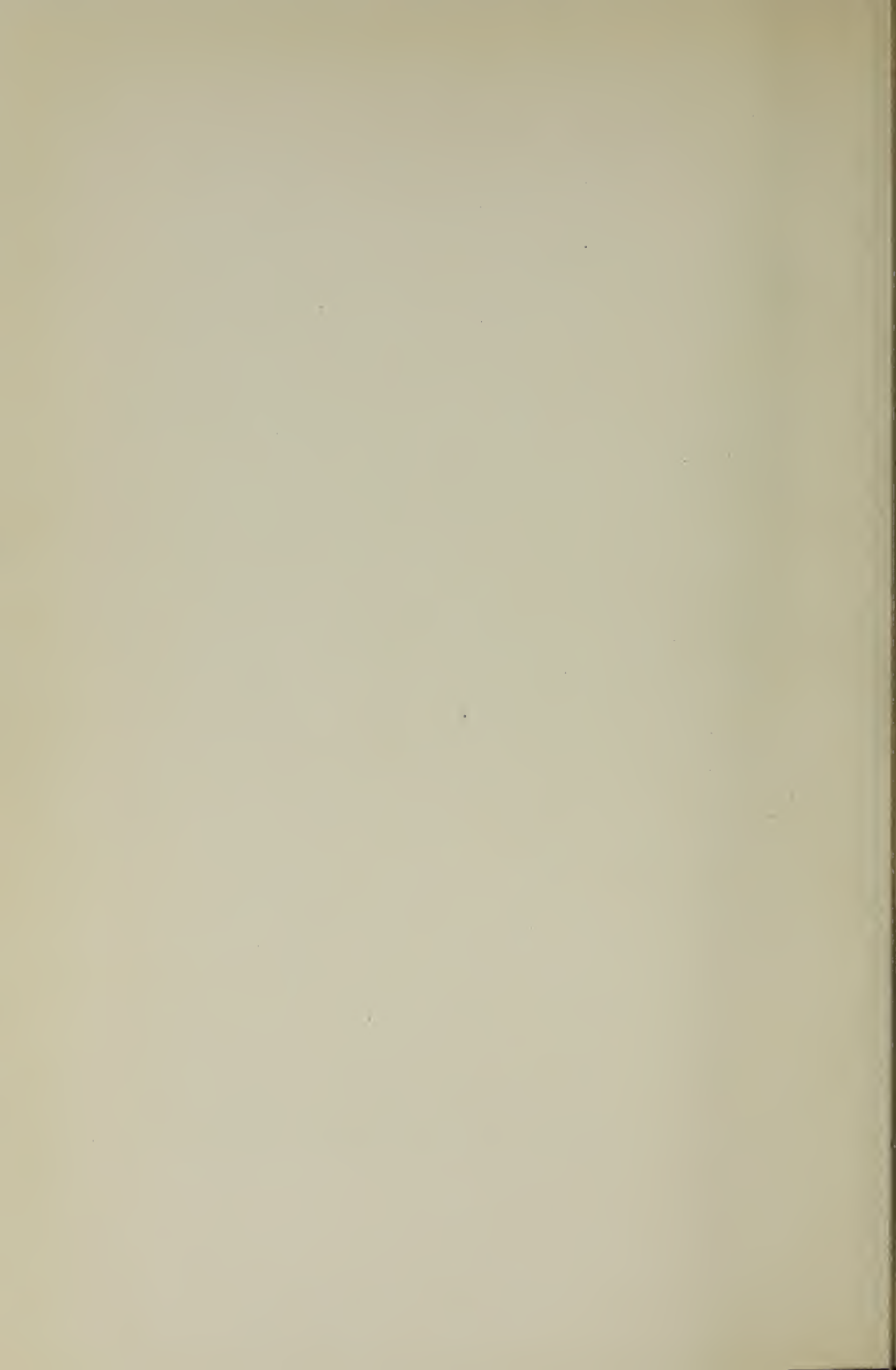
Lectures on finishing commence with the third year and are augmented by extensive practice with the machines in the Finishing Department.

Work in the Engineering Department extends throughout all three years, and includes mechanical drawing, steam engineering and electricity. The practical application of the principles studied in these subjects is brought out forcibly in the work on mill engineering, where mill design and construction are considered. A short course covering methods employed in the testing of fibers, yarns and cloths, together with laboratory work in the manipulation of certain physical apparatus, is given in the third year.

For detailed description of the subjects see page 38.



Organic Chemistry Laboratory.



Course II. — Wool Manufacturing.

[For first term see page 25.]

FIRST YEAR.

Second Term.

	Hours of Exercise.		Hours of Exercise.
Mechanism B-3,	60	Elementary Chemistry C-1,	75
Mechanical Drawing B-8,	75	Elementary German E-2 or	30
Mathematics B-1,	45	Elementary French E-4,	
Textile Design D-1,	150	English E-1,	30
Technology of Fibers G-1,	60		

SECOND YEAR.

First Term.

Woolen and Worsted Yarn Manufac- ture G-1,	240	Machine Drawing B-10,	30
Textile Design D-3,	75	Steam Engineering B-12,	45
Power Weaving D-9,	45	Physics B-11,	45
Textile Chemistry and Dyeing Lec- tures C-9,	30	Industrial History E-6,	15

Second Term.

Woolen and Worsted Yarn Manufac- ture G-1,	210	Steam Engineering B-12,	15
Textile Design D-3,	60	Machine Drawing B-10,	45
Power Weaving D-9,	90	Strength of Materials B-17,	30
Textile Chemistry and Dyeing Lec- tures C-9,	15	Physics B-11,	45
		Industrial History E-6,	15

THIRD YEAR.

First Term.

Woolen and Worsted Yarn Manufac- ture G-1,	195	Power Weaving D-10,	120
Knitting F-2,	30	Woolen and Worsted Finishing H-1,	75
Textile Design, Cloth Construction, D-6, 7,	45	Electricity B-19,	30
		Mill Engineering B-21,	30

Second Term.

Woolen and Worsted Yarn Manufac- ture G-1,	165	Mill Engineering B-21,	45
Knitting F-2,	45	Power Weaving D-10,	150
Textile Design, Cloth Construction, D-6, 7,	45	Woolen and Worsted Finishing H-1,	75
		Thesis.	

Course III. — Textile Design (General Textile Course).

The general course in textile design is planned to meet the demand of young men for a technical training in the general processes of textile manufacturing, but with particular reference to the design and construction of fabrics. To this end a foundation is laid in the first year by instruction in the elementary principles of designing, decorative art and weaving. That he may later in the course pursue to advantage instruction in yarn manufacturing, weaving, dyeing, finishing and some engineering problems, a foundation course in mechanics, mathematics and chemistry is laid. As the student is required to pursue courses in the yarn departments, both cotton and wool, he acquires a knowledge of the manufacture of cotton yarns from the bale to the yarn, and of woolen and worsted yarns from the fleece through the varied processes of manufacturing woolen yarn or worsted yarn by both the French and Bradford systems.

Throughout his entire course he receives instruction in design, cloth analysis and construction of all the standard cloths, viz., trouserings, coatings, suitings, blankets, velvets, corduroys, plushes, etc. This is followed by advanced work in Jacquard designing and weaving, which serves not only to acquaint the student with the many kinds of cotton, woolen, worsted and silk fabrics of figured design, but stimulates and develops any artistic talent he may possess. Decorative art becomes an important part of the work of the second and third years.

The course in general inorganic and organic chemistry of the first year leads to the subjects of textile chemistry and dyeing in the second year.

Power weaving commences with the second year and continues throughout the course, and work on all types of looms is required.

During the third year the student receives instruction in the finishing of cotton goods and woolen and worsted cloths. This instruction is given by means of lecture and laboratory work.

The engineering subjects given in the second and third years are intended to acquaint the student with such general knowledge as will be of assistance should he be called upon in later life to be a mill manager, or should his subsequent progress lead to some executive position in the operation of a textile plant.

For detailed description of the subjects see page 38.

Course III. — Textile Design (General Textile Course).

[For first term see page 25.]

FIRST YEAR.

Second Term.

	Hours of Exercise.		Hours of Exercise.
Mechanism B-3,	60	Elementary Chemistry C-1,	75
Mechanical Drawing B-8,	75	Elementary German E-2 or	30
Mathematics B-1,	45	Elementary French E-4, }	
Textile Design D-1,	150	English E-1,	30
Technology of Fibers F-1 and G-1,	60		

SECOND YEAR.

First Term.

Textile Design, Decorative Art, Hand		Machine Drawing B-10,	30
Loom Weaving D-2, 3, 4,	255	Steam Engineering B-12,	45
Cotton Yarn Manufacture F-1,	60	Physics B-11,	45
Power Weaving D-9,	45	Industrial History E-6,	15
Textile Chemistry and Dyeing Lectures			
C-9,	30		

Second Term.

Textile Design, Decorative Art, Hand		Steam Engineering B-12,	15
Loom Weaving D-2, 3, 4,	150	Strength of Materials B-17,	30
Cotton Yarn Manufacture G-1,	45	Physics B-11,	45
Power Weaving D-9,	165	Industrial History E-6,	15
Textile Chemistry and Dyeing Lectures		Machine Drawing B-10,	45
C-9,	15		

THIRD YEAR.

First Term.

Textile Design, Cloth Construction,		Power Weaving D-10,	135
Decorative Art D-6, 7, 8,	120	Woolen and Worsted Finishing H-1,	75
Woolen and Worsted Yarn Manufac-		Cotton Finishing H-2,	30
ture G-1,	105	Electricity B-19,	30
Mill Engineering B-21,	30		

Second Term.

Textile Design, Cloth Construction,		Power Weaving D-10,	135
Decorative Art D-6, 7, 8,	180	Woolen and Worsted Finishing H-1,	75
Woolen and Worsted Yarn Manufac-		Cotton Finishing H-2,	75
ture G-1,	30	Thesis.	
Mill Engineering B-21,	30		

Course IV. — Chemistry and Textile Coloring.

The four-year course in Chemistry and Textile Coloring, leading to the degree of B.T.C., is especially intended for those who wish to engage in any branch of textile chemistry, textile coloring, bleaching, finishing or the manufacture and sale of the dyestuffs or chemicals used in the textile industry. The theory and practice of all branches of dyeing, printing, bleaching, scouring and finishing are taught by lecture work supplemented by a large amount of experimental laboratory work and actual practice in the dyehouse and finishing room.

The underlying theories and principles of chemistry are the same, no matter to what industry the application is eventually made. Furthermore, no industry involves more advanced and varied applications of the science of chemistry than those of the manufacture and application of the coal-tar coloring matters. In addition, the textile colorist must consider the complex composition of the textile fibers, and the obscure reactions which take place between them and the other materials of the textile industry.

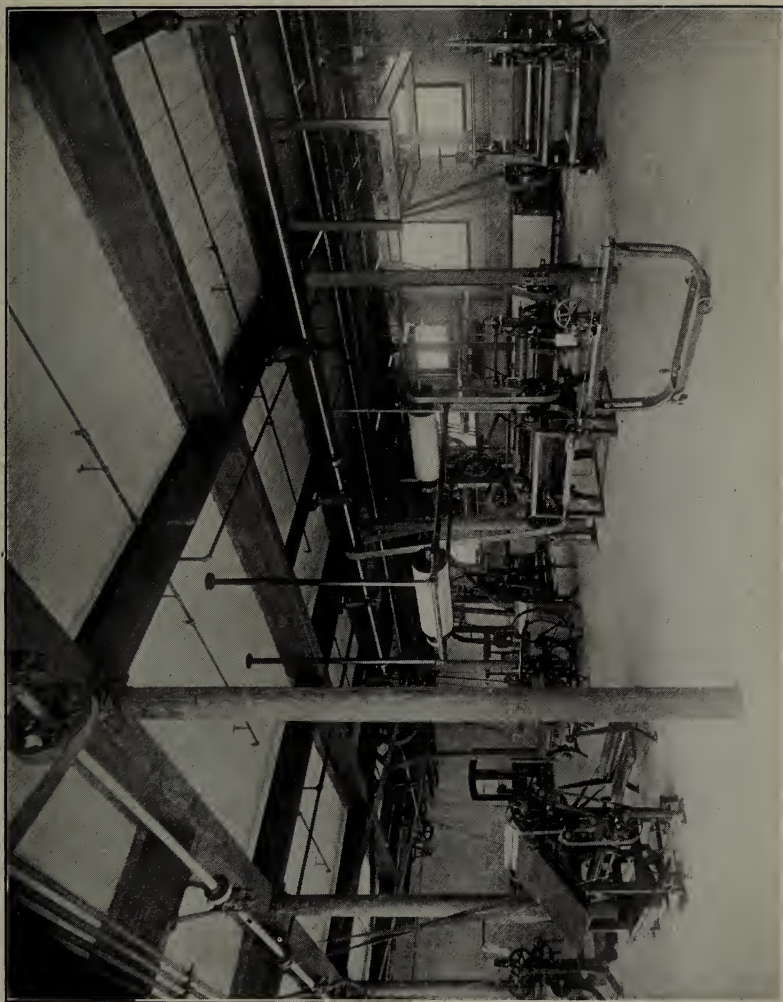
During the first year general chemistry, including both inorganic and organic, is taught by lectures and laboratory work, and this is supplemented during the second term by qualitative analysis and stoichiometry.

Advanced inorganic chemistry, as well as advanced organic chemistry, is studied during the second and third year as a continuation of the elementary chemistry of the first year, and much time is spent upon quantitative analysis, industrial chemistry, and textile chemistry and dyeing.

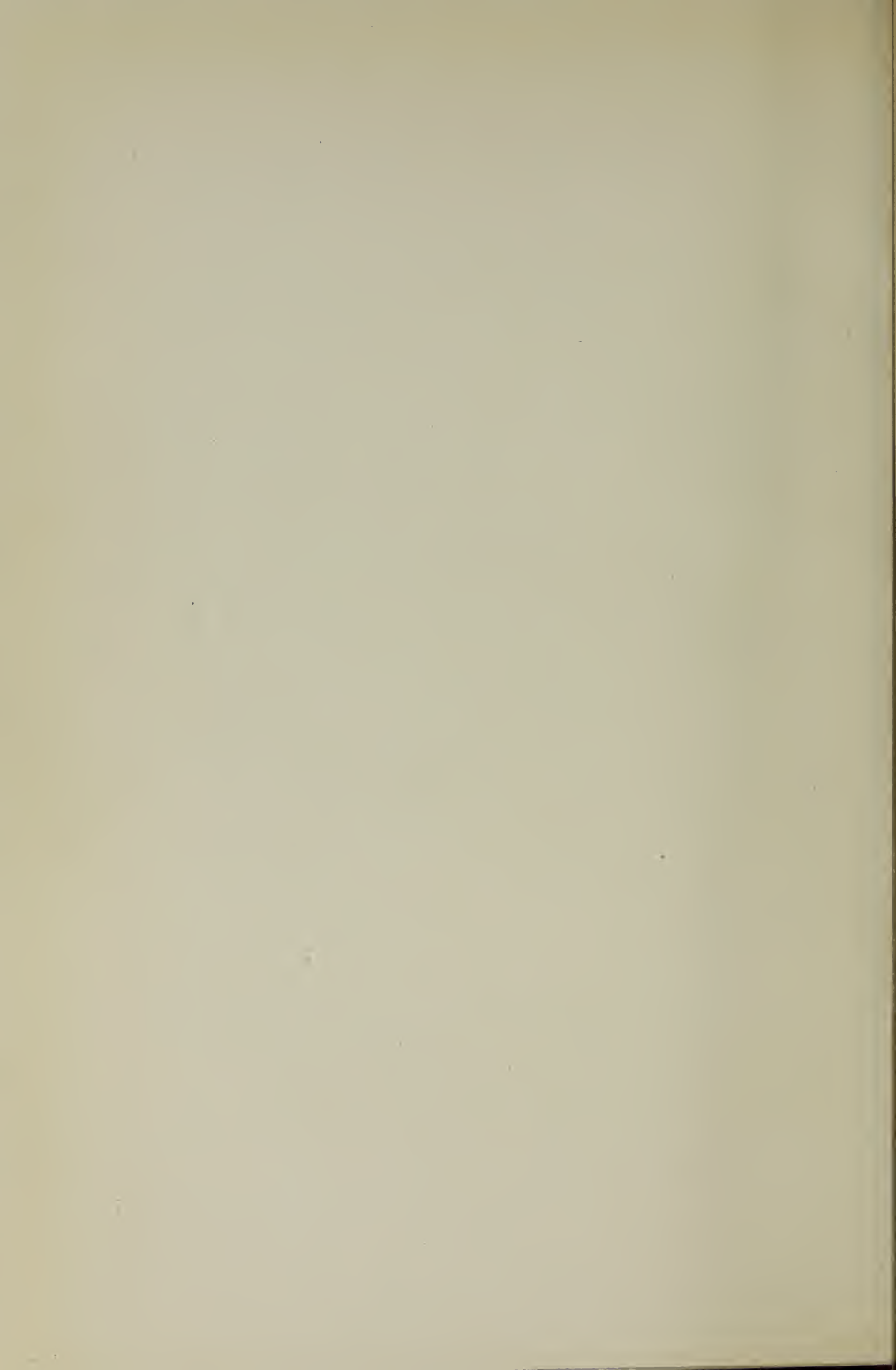
The foundation work in general chemistry is continued during the third year with courses in physical chemistry, organic laboratory work and analytical work. The subject of industrial chemistry is introduced, and much time is devoted to advanced textile chemistry, dye testing, color matching, calico printing and woolen, worsted and cotton finishing.

The fourth year is characterized by an endeavor to present certain subjects of a more applied nature in such a manner that the student's reasoning power and ability to apply the knowledge gained during the first three years may be developed to the fullest extent. The subject of engineering chemistry is introduced, and the work in the Dyeing and Analytical Laboratories is applied as far as possible to the actual requirements of the factory chemist and colorist. The student is given a thorough course in microscopy, photomicrography and the use of the various instruments, such as the spectroscope, ultra-microscope, polariscope, tintometer, etc., which often prove of vital importance in the advanced study of textile chemistry. During this fourth year the student devotes much time in the Organic Laboratory in the manufacture of dyestuffs. This is followed by some research work or original investigation, as time will permit. Upon this he must present a satisfactory thesis, or report, before receiving his degree.

For detailed description of the subjects see page 38.



Cotton Finishing.



Course IV. — Chemistry and Textile Coloring.

[For first year see page 25.]

SECOND YEAR.

First Term.

	Hours of Exercise.		Hours of Exercise.
Advanced Inorganic Chemistry C-4,	45	Quantitative Laboratory C-7,	165
Textile Chemistry and Dyeing Lecture C-9,	45	Steam Engineering B-12,	45
Textile Chemistry and Dyeing Labora- tory C-10,	60	Physics B-11,	45
Quantitative Analysis Lecture C-7,	15	Industrial History E-6,	15
Stoichiometry C-3,	15	Advanced German E-3,	30
		Mathematics B-2,	45

Second Term.

Advanced Inorganic Chemistry C-4,	30	Quantitative Laboratory C-7,	135
Textile Chemistry and Dyeing Lecture C-9,	30	Advanced Organic Chemistry C-5,	30
Textile Chemistry and Dyeing Labora- tory C-10,	120	Physics B-11,	45
Stoichiometry C-3,	15	Industrial History E-6,	15
Mathematics B-2,	45	Advanced German E-3,	30
		Steam Engineering B-12,	15
		Quantitative Analysis C-6,	15

THIRD YEAR.

First Term.

Advanced Textile Chemistry and Dye- ing Lecture C-14,	30	Advanced Organic Chemistry Lecture C-5,	30
Advanced Textile Chemistry and Dye- ing Laboratory C-14,	135	Technical German C-21,	30
Industrial Chemistry C-12,	30	Woolen and Worsted Finishing H-1,	75
Quantitative Analysis Laboratory C-7,	150	Economics E-7,	30

Second Term.

Advanced Textile Chemistry and Dye- ing Lecture C-14,	15	Physical Chemistry C-8,	30
Advanced Textile Chemistry and Dye- ing Laboratory C-14,	75	Technical German C-21,	30
Industrial Chemistry C-12,	30	Organic Laboratory C-15,	120
Woolen and Worsted Finishing H-1,	75	Quantitative Analysis Laboratory C-7,	105
		Economics E-7,	30
		Quantitative Analysis C-6,	15

FOURTH YEAR.

First Term.

Physical Chemistry C-8,	30	Quantitative Analysis and Industrial Analysis C-17,	105
Technical German C-21,	30	Dyeing Laboratory C-14,	90
Engineering Chemistry C-16,	15	Organic Laboratory C-15,	90
Advanced Textile Chemistry and Dye- ing C-14,	30	Industrial Laboratory C-13,	45
		Thesis C-22,	90

Second Term.

Organic Laboratory C-15,	105	Textile Testing G-2,	45
Microscopy C-18,	45	Advanced Dyeing Conference C-19,	15
Thesis C-22,	135	Technical German C-21,	30
Dyeing Laboratory C-14,	75	Engineering Chemistry C-16,	75

Course VI. — Textile Engineering.

This course of four years' training, leading to the degree of Bachelor of Textile Engineering (B.T.E.), aims to meet, in the broadest possible manner, the increasing demands of the textile industry for men with adequate and specialized preparation. The magnitude and scope of the textile and allied industries fully justify the most thorough technical training possible for all who aspire to leadership in this field. Much of the future development of the textile industry will depend upon an intensive application of science to its needs, and the possibilities are unlimited. The results of such application of scientific effort in other industries have been noteworthy, and modern progress calls for similar action in all. The demand is already strong for broadly trained engineers who have a full appreciation of the details and problems of the processes of textile manufacturing.

The student is first thoroughly grounded in the fundamental principles of mathematics and science underlying all engineering and industrial work. In such preliminary subjects as mechanics, drawing, physics and mathematics the practical uses of same are considered of first importance.

Much emphasis is laid on the study of power generation and transmission, and courses with laboratory practice are given in steam and electrical engineering to familiarize the student with modern practice in these branches.

Systematic instruction in the most approved methods of machine shop practice is given in a shop fully equipped with modern tools, and this feature of the course is considered a most valuable adjunct to the training of a textile engineer.

Thorough instruction in all of the various branches of textile manufacturing is provided for students pursuing this course. Among the subdivisions of these branches are textile designing, power weaving, cotton spinning, woolen and worsted spinning, dyeing, cotton and woolen finishing and textile testing.

The work in mill engineering covers a wide range of subjects, including mill construction, mill fire protection, mill heating, lighting and humidifying and power transmission. The arrangement of machinery and plants for most efficient production and economical power distribution is also taken up in detail.

During the fourth year considerable time is given to questions of business administration, including the principles and application of scientific management and efficiency engineering, mill cost accounting and business law.

For detailed description of subjects see page 38.

Course VI. — Textile Engineering (General Course).

[For first year see page 25.]

SECOND YEAR.

First Term.

	Hours of Exercise.		Hours of Exercise.
Textile Chemistry and Dyeing Lectures		Graphic Statics B-4,	30
C-9,	30	Engineering Laboratory B-14,	45
Physics B-11,	45	Shop Work B-15,	45
Mathematics B-2,	45	Cotton Yarn Manufacture F-1,	75
Machine Drawing B-10,	60	Advanced German E-3, 5,	45
Steam Engineering B-12,	45	Industrial History E-6,	15
Power Weaving D-9,	45		

Second Term.

Physics B-11,	45	Yarn Manufacture, F-1 and G-1,	90
Mathematics B-2,	45	Advanced German E-3, 5,	45
Strength of Materials B-17,	30	Industrial History E-6,	15
Machine Drawing B-10,	75	Power Weaving D-9,	45
Steam Engineering B-12,	75	Textile Chemistry and Dyeing Lectures	
Shop Work B-15,	45	C-9,	15

THIRD YEAR.

First Term.

Electrical Engineering B-19,	60	Mathematics B-2,	30
Machine Shop Practice B-15,	60	Mill Engineering B-21,	45
Engineering Laboratory B-14,	30	Woolen and Worsted Finishing H-1,	75
Yarn manufacture F-1 and G-1,	90	Economics E-7,	30
Strength of Materials B-17,	30	Textile Chemistry and Dyeing Lectures	
Power Weaving D-10,	30	C-9,	45

Second Term.

Hydraulics B-13,	15	Woolen and Worsted Finishing H-1,	75
Electrical Engineering B-19,	75	Power Weaving D-10,	30
Mill Engineering B-21,	45	Strength of Materials B-17,	30
Machine Shop Practice B-15,	45	Economics E-7,	30
Engineering Laboratory B-14,	45	Textile Chemistry and Dyeing Lectures	
Mathematics B-2,	30	C-9,	15
Yarn Manufacture F-1 and G-1,	105		

FOURTH YEAR.

First Term.

Yarn Manufacture F-1 and G-1,	165	Power Plants B-18,	15
Mill Engineering B-21,	90	Business Administration B-20,	90
Electrical Engineering B-19,	75	Thesis,	45
Cotton Finishing H-2,	30		

Second Term.

Yarn Manufacture and Knitting F-1 and G-1,	105	Power Plants B-18,	30
Mill Engineering B-21,	75	Business Administration B-20,	90
Electrical Engineering B-19,	75	Thesis,	45
Cotton Finishing H-2,	75	Textile Testing G-2,	30

Course VI. — Textile Engineering (Cotton Option).

[For first year see page 25.]

SECOND YEAR.

First Term.

	Hours of Exercise.		Hours of Exercise.
Textile Chemistry and Dyeing Lectures		Graphic Statics B-4,	30
C-9,	30	Shop Work B-15,	45
Physics B-11,	45	Cotton Yarn Manufacture F-1,	75
Mathematics B-2,	45	Cotton Design D-2,	30
Machine Drawing B-10,	30	Advanced German E-3, 5,	45
Engineering Laboratory B-14,	45	Industrial History E-6,	15
Steam Engineering B-12,	45	Power Weaving D-9,	45

Second Term.

Physics B-11,	45	Cotton Design D-2,	45
Mathematics B-2,	45	Power Weaving D-9,	45
Strength of Materials B-17,	30	Advanced German E-3, 5,	45
Machine Drawing B-10,	30	Industrial History E-6,	15
Steam Engineering B-12,	75	Textile Chemistry and Dyeing Lectures	
Shop Work B-15,	45	C-9,	15
Cotton Yarn Manufacture F-1,	90		

THIRD YEAR.

First Term.

Electrical Engineering B-19,	60	Engineering Laboratory B-14,	30
Machine Shop Practice B-15,	60	Mathematics B-2,	30
Mill Engineering B-21,	45	Strength of Materials B-17,	30
Cotton Yarn Manufacture F-1,	105	Economics E-7,	30
Cotton Design D-6, 7,	45	Textile Chemistry and Dyeing Lectures	
Power Weaving D-10,	45	C-9,	45

Second Term.

Hydraulics B-13,	15	Engineering Laboratory B-14,	45
Electrical Engineering B-19,	75	Mathematics B-2,	30
Machine Shop Practice B-15,	45	Strength of Materials B-17,	30
Mill Engineering B-21,	45	Economics E-7,	30
Cotton Yarn Manufacture F-1,	120	Textile Chemistry and Dyeing Lectures	
Cotton Design D-6, 7,	45	C-9,	15
Power Weaving D-10,	30		

FOURTH YEAR.

First Term.

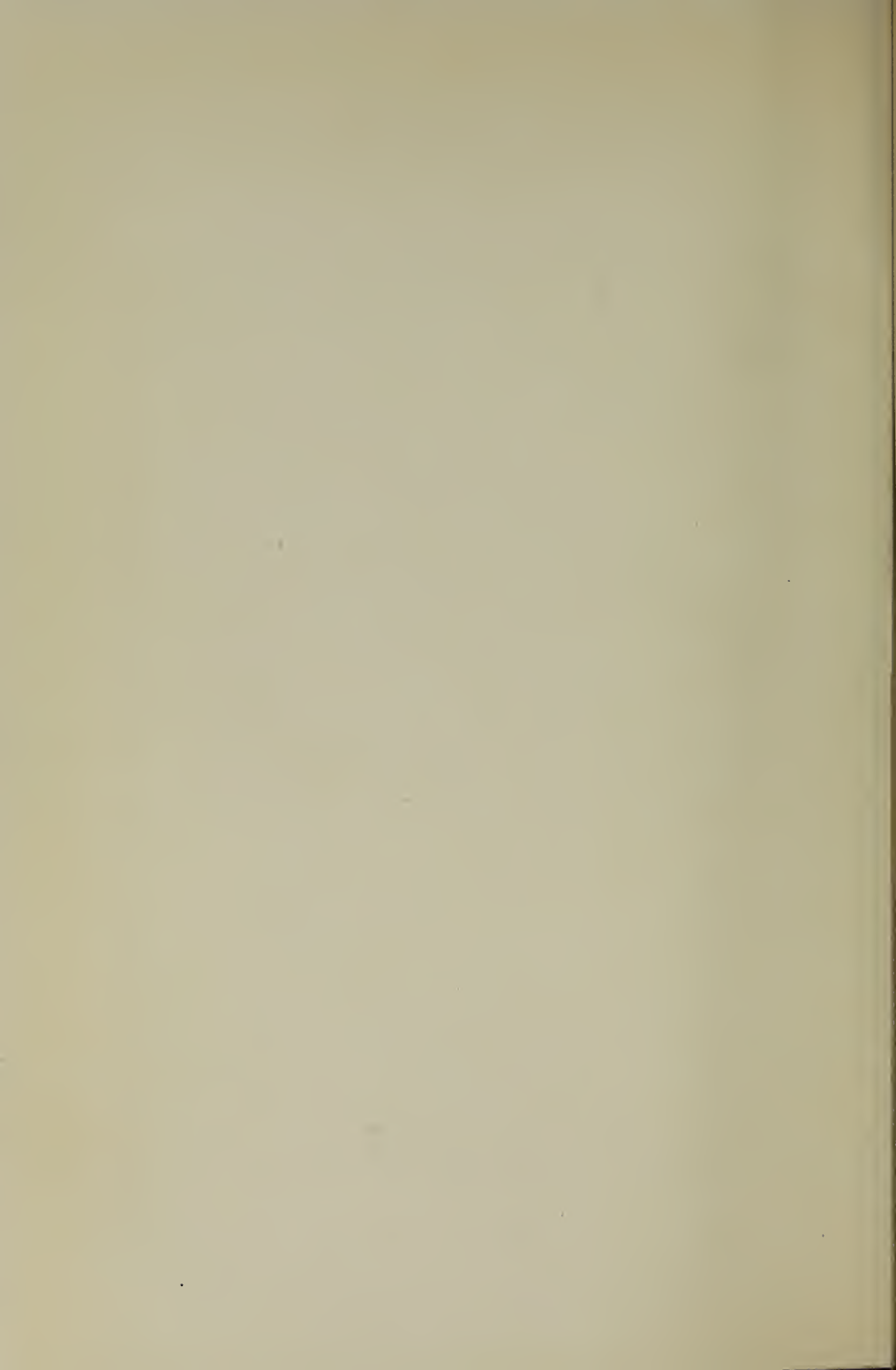
Mill Engineering B-21,	90	Cotton Design D-6, 7,	45
Electrical Engineering B-19,	75	Cotton Finishing H-2,	30
Cotton Yarn Manufacture F-1,	135	Business Administration B-20,	90
Power Plants B-18,	15	Thesis,	45

Second Term.

Yarn Manufacture and Knitting F-1,	105	Textile Testing G-2,	30
Mill Engineering B-21,	75	Cotton Finishing H-2,	75
Electrical Engineering B-19,	75	Business Administration B-20,	90
Power Plants B-18,	30	Thesis,	45



Machine Shop.



Course VI. — Textile Engineering (Wool Option).

[For first year see page 25.]

SECOND YEAR.

First Term.

	Hours of Exercise.		Hours of Exercise.
Textile Chemistry and Dyeing Lectures		Shop Work B-15,	45
C-9,	30	Woolen and Worsted Yarn Manufac-	
Physics B-11,	45	tured G-1,	75
Mathematics B-2,	45	Woolen and Worsted Design D-3,	30
Machine Drawing B-10,	30	Advanced German E-3, 5,	45
Engineering Laboratory B-14,	45	Industrial History E-6,	15
Steam Engineering B-12,	45	Power Weaving D-9,	45
Graphic Statics B-4,	30		

Second Term.

Physics B-11,	45	Woolen and Worsted Design D-3,	45
Mathematics B-2,	45	Power Weaving D-9,	45
Strength of Materials B-17,	30	Advanced German E-3, 5,	45
Machine Drawing B-10,	30	Industrial History E-6,	15
Steam Engineering B-12,	75	Textile Chemistry and Dyeing Lectures	
Shop Work B-15,	45	C-9,	15
Woolen and Worsted Yarn Manufac-			
tured G-1,	90		

THIRD YEAR.

First Term.

Electrical Engineering B-19,	60	Power Weaving D-10,	45
Machine Shop Practice B-15,	60	Engineering Laboratory B-14,	30
Mathematics B-2,	30	Strength of Materials B-17,	30
Mill Engineering B-21,	45	Economics E-7,	30
Woolen and Worsted Yarn Manufac-		Textile Chemistry and Dyeing Lectures	
tured G-1,	75	C-9,	45
Woolen and Worsted Finishing H-1,	75		

Second Term.

Hydraulics B-13,	15	Economics E-7,	30
Electrical Engineering B-19,	75	Woolen and Worsted Yarn Manufac-	
Mill Engineering B-21,	45	tured G-1,	105
Machine Shop Practice B-15,	45	Woolen and Worsted Finishing H-1,	75
Engineering Laboratory B-14,	45	Power Weaving D-10,	30
Mathematics B-2,	30	Strength of Materials B-17,	30

FOURTH YEAR.

First Term.

Mill Engineering B-21,	90	Power Weaving D-10,	45
Electrical Engineering B-19,	75	Business Administration B-20,	90
Worsted Yarn Manufacture G-1,	120	Power Plants B-18,	15
Woolen and Worsted Design D-6, 7,	45	Thesis,	45

Second Term.

Mill Engineering B-21,	75	Business Administration B-20,	90
Electrical Engineering B-19,	75	Textile Testing G-2,	30
Worsted Yarn Manufacture and Knit-		Thesis,	45
ting G-1,	105	Power Plants B-18,	30
Woolen and Worsted Design D-6, 7,	30	Power Weaving D-10,	45

SUBJECTS OF INSTRUCTION.

TEXTILE ENGINEERING DEPARTMENT — B.

Mathematics (Algebra, Trigonometry, Elements of Analytical Geometry) — B-1.

PREPARATION: ADMISSION REQUIREMENTS.

This subject is given in the first year with the view of consolidating the separate branches of mathematics that have been given in previous years. The progress of the school has been such as to necessitate the introduction of higher algebra and trigonometry in the early part of the first term, and hence, as in other technical schools, it has resulted in a combined course. This course is presented by means of lectures, textbook, class and problem work, and consists essentially of the following: progressions, graphical representation; permutations and combinations, logarithms, slide rule, trigonometry, binomial theorem, partial and continued fractions, series, theory of equations, significant figures, and plotting of scientific data, straight line equations, point of division of a line, equation of parallel and perpendicular lines.

[All courses.]

Mathematics (Analytical Geometry, Differential Calculus, Elements of Integral Calculus) — B-2.

PREPARATION: B-1.

This course is a continuation of the work of the first year, and treats of the following subjects: formulæ of differentiation, conic sections, transformation of co-ordinates, maxima and minima, direction of curves, center and radius of curvature, problems on differential calculus, elements of integral calculus, integration as a summation, and plane areas. The above are treated in both rectangular and polar co-ordinates. Formulæ of integration, integration by parts, integration by substitution, successive integration, evaluation of integrals, center of gravity, center of pressure, total pressure, moment of inertia.

[Courses IV, VI.]

Mechanics and Mechanism — B-3.

PREPARATION: ADMISSION REQUIREMENTS. TAKEN SIMULTANEOUSLY WITH B-1.

These subjects are a necessary preparation for all courses, and are taken in one hundred and five hours of lectures and recitations covering the whole of the first year. The fundamental principles of these subjects are considered of the greatest importance, and the application and problems are selected with special reference to their practical uses in textile machinery. The large

variety of mechanism applications met in textile machines makes this course an essential one as a proper preparation for the student's later work in spinning and weaving. Some of the subjects treated in this course are: —

Mechanics.

Work, power and energy.
Principle of moments.
Simple and compound levers.
Differential and common pulleys.
Jackscrew and worm and wheel.
Parallelogram and triangle of forces.
Inclined plane and wedge.

Mechanism.

Linear and angular velocity.
Belting calculations.
Gears and gear trains.
Cam and cone pulley design.
Linkage problems.
Differential and epicyclic trains.
Intermittent motions.

[All courses.]

Graphic Statics — B-4.

PREPARATION: B-1 AND B-3.

The work in this course is presented by lecture and recitations. First are considered mathematical and graphical conditions for equilibrium for any system of forces, and the subjects of center of gravity and funicular polygons are introduced. Then follow problems on bridge and roof trusses under various conditions of dead, live, wind and snow loading. Masonry arches are finally considered.

[Course VI.]

Weaving Mechanism — B-5.

PREPARATION: B-1, B-3. TAKEN SIMULTANEOUSLY WITH D-9.

This course consists of thirty lectures given during the first term of the second year, and is required by all the regular students taking power weaving. A thorough analysis of all the important motions of power weaving is undertaken, and the treatment is by graphical and analytical methods. The object of this course is to so familiarize the student with the theory of the mechanism of the loom that the time spent in the weave room on loom fixing will be used to the best advantage.

[Courses I, II, III, VI.]

Mechanical Laboratory — B-6.

PREPARATION: B-3. TAKEN SIMULTANEOUSLY WITH B-4.

This work is given during the second term of the first year, and is supplementary to the course in Mechanism. Especial importance is attached to the demonstration of the fundamental principles of these subjects. Some of the experiments and tests made in this course are as follows: —

Determination of coefficient of friction.

Proof of principle of moments.

Proof of principle of work.

Efficiency test of various hoisting and lifting appliances, such as tackle and fall, worm block, differential and triplex blocks, jackscrews, wedges, etc.

Experimental proofs of the principles of graphic statics.

Efficiency tests on belt transmission, including measurement of belt tensions, coefficient of friction, slip, etc.

Tests on various types of absorption dynamometers.

Calibration of transmission dynamometer.

Power measurements on textile machinery with differential dynamometer.

Measurement of friction of steam engine.

[Course VI.]

Mechanical Drawing — B-7.

PREPARATION: ADMISSION REQUIREMENTS. TAKEN SIMULTANEOUSLY WITH B-3.

This course is taken during the first year, and consists of work in the drawing room supplemented by lectures. This subject is considered of the greatest importance as a preparation for the student's future work, and the practical usefulness of drawing of this character is fully emphasized. The course is systematically laid out covering in order the following divisions: —

Care and use of drawing instruments.

Geometrical constructions.

Elements of projections and descriptive geometry.

Isometric projection.

Developments with practical applications.

Sketching practice on machine details.

[All courses.]

Machine Drawing — B-8.

PREPARATION: B-7.

This work is the continuation of Mechanical Drawing, and is pursued throughout the second term of the first year. This work is wholly of a practical character, and includes sketching from the textile machinery details, working scale detail and assembly drawing, tracing and blue printing. The rudiments of machine design to supplement the work in strength of materials is also given.

[Courses I, II, III, VI.]

Machine Drawing — B-9.

PREPARATION: B-7.

For students electing Course IV in the second term of the first year a course of machine drawing is given similar to B-8, except that it is not as extensive and is concluded in thirty hours.

Machine Drawing — B-10.

PREPARATION: B-3, B-7, B-8.

During the second year the work in Machine Drawing is devoted to advanced graphical mechanism problems. The data for all of these problems are in every case taken directly from some of the textile machines that the students meet in other departments. These problems include cam designs for builder motions, mule scroll layouts, Scaife builder motion analysis, fly frame cone design, mule quadrant motion, analysis of camless winder, and a number of others of similar character.

[Courses I, II, III, VI.]

Physics — B-11.**PREPARATION: B-1.**

This course is given during the second year, and serves especially as a preparation for steam engineering, hydraulics, electricity and optics. The subject is presented by means of lectures, recitations, problems and reference books. The lectures deal chiefly with the application of the various physical laws and principles, with a view to their adaption to the above subjects, while the reference books are used to supplement the lectures. The subjects taken up are essentially as follows: gravitation, moving bodies, mechanics, elasticity, hydrostatics, elements of hydraulics, properties of fluids and gases, and the theory of sound. These subjects are followed by a series of lectures on heat phenomena, dealing with the generation of heat, thermometry, calorimetry, transfer of heat, its effect on solids, liquids and gases, and problems such as lead to the elements of steam engineering.

The latter part of the course is devoted to the discussion of the laws governing the nature, propagation and transmission of light waves, special stress being laid on interference, reflection and refraction, mirrors, lenses, microscope, spectroscope and photometer. Particular attention is given to the color effects produced by the combination of different colors in connection with Maxwell's Color Diagram and the Young-Helmholtz Theory of Color Sensation. During the last part of the course the principles of electricity and magnetism are taken up in detail.

[All courses.]

Steam Engineering — B-12.**PREPARATION: B-11.**

The purpose of this work is to familiarize the student with the essentials of power generation, and the means and methods of modern practice in steam engineering.

The different types of boilers, engines, pumps, condensers, turbines and other important features of a steam plant are first considered with reference to their construction and general arrangement. The remainder of the course is devoted to a thorough study of these elements of a power plant from the standpoint of the heat phenomena upon which their operation and efficient performance depend. Practice with the steam engine indicator is included in this work, and also engine and boiler testing.

[All courses.]

Hydraulics — B-13.**PREPARATION: B-1, B-2, B-3, B-11.**

This subject is presented by means of lectures covering the principles of hydraulics, including hydrostatics, measurements of flow of water through orifices, pipes, nozzles and over weirs. The different types of turbines are studied with results of tests and rating tables.

[Course VI.]

Engineering Laboratory — B-14.**PREPARATION: B-12.**

The principles underlying the subjects of steam engineering, hydraulics and thermodynamics are demonstrated in a practical manner in the work in the Engineering Laboratory. Greater importance is attached to the development of initiative and responsibility in the student than the mere accomplishment of a large number of carefully planned tests. The character of this work is indicated by the following list of experiments and tests:—

Calibration of gauges, thermometers, indicators, anemometers, tachometers and other measuring instruments.

Experiments on flow of steam.

Calorimeter tests.

Radiation tests and pipe-covering tests.

Injector and ejector tests.

Engine tests. Condensing and non-condensing.

Steam pump tests.

Surface condenser tests.

Valve setting.

Boiler testing.

Tests on heating and ventilating fans, both motor and engine driven.

Pump tests. Triplex and centrifugal.

Air-compressor tests.

Flue gas analysis.

Steam turbine tests. Condensing, non-condensing and low pressure.

Complete steam plant testing.

Gas engine testing.

[Course VI.]

Machine Shop Practice — B-15.**PREPARATION: B-3.**

Systematic instruction is given in the most approved methods of machine shop practice, the object being to familiarize the student with the proper use of hand and machine tools, and the characteristics of the different materials worked. Particular attention is given to the form, setting, grinding and tempering of tools and the mechanism of the different machines involving certain speeds, feeds, etc. The course is so planned that the instruction in each typical operation shall conform as nearly as possible to commercial machine-shop practice on textile machinery. The list of tools which appears under "Equipment" in this Bulletin gives an idea of the scope of the work, which includes chipping and filing, tool grinding and tempering, straight and taper turning, screw cutting, drilling and boring, planer work; milling machine work, including gear cutting. Instruction is also given in the use of woodworking tools, both hand and machine, and in forging.

[Course VI.]

Strength of Materials — B-17.

PREPARATION: B-1 AND B-3.

This is a short course consisting of thirty lectures given in the second year in which the elements of the subject are set forth. The main topics which are discussed are stress and strain, testing of materials, bending moments and shearing forces, beam design, column design, torsion, compound beams and columns, combined stresses. The course is largely preparatory for the third-year work in Mill Engineering, and is followed in the third year of the degree course in Textile Engineering by further and more advanced work along similar lines.

[Courses I, II, III, VI.]

Power Plants — B-18.

PREPARATION: B-12.

This course, which consists of lectures given during the third and fourth years, takes up the fundamental consideration involved in the planning of a power plant for a textile mill. A standard textbook is used in connection with the lectures, and the problems are taken largely from plans of existing modern plants. The choice of type and size of units for certain conditions are given particular attention.

[Course VI.]

Electrical Engineering — B-19.

PREPARATION: B-11.

The elementary principles of electricity and magnetism are considered in the lecture course of physics. Their development and application are taken up in this course in a detailed study of the means used to generate, transmit and transform electrical energy to meet the requirements of textile machinery and plants. This involves the theory of direct and alternating current generators, motors, instruments, as well as the various phenomena associated with them.

The laboratory course includes a study of instruments and methods employed in general electrical power testing. Attention is given to various lighting units, their particular properties and relative values in meeting the special problems of illumination in textile mills.

[Course VI.]

Business Administration — B-20.

PREPARATION: B-1, E-1, E-7.

In recognition of the great advances which have been recently made towards better methods of management, and of the possibilities which may result from its application to the textile industry, a course in efficiency engineering has been established to enable the student to understand and apply the principles and details of modern scientific management. The instruction in this course begins with a consideration of the factory location and design and their effect on efficiency of production, after which the proper form of organization for manufacturing establishments is discussed in detail, together with organization charts and records. This is followed by a study of the details of

the work of the various departments, especially the planning department, during which the subjects of time study, planning, routing, special slide rules and instruments, store systems and perpetual inventories, mnemonic symbolizing, orders and returns, graphical reports, etc., are all gone into very carefully.

The course includes a thorough study of the various wage systems in common use, and the relations of psychology to efficient management are also considered. Finally, visits to shops where modern methods of management have been installed enable the student to see the practical working out of the ideas developed in the lectures.

ACCOUNTING. — The purpose of the course in accounting is twofold. In the first place, it aims to acquaint the student with the modern methods of handling the financial end of a mercantile and manufacturing business, and at the same time gives him a much-needed knowledge of certain common elementary business transactions, such as, for instance, the use of checks, drafts and notes, bank discounts, etc. In the second place, it gives him an intelligent comprehension of the requirements and the design of a proper cost-accounting system.

Whereas it is not the purpose of the course to make the student a proficient bookkeeper or accountant, the nature of the work necessitates a knowledge of double-entry bookkeeping and of the functions of ledger accounts, which is developed by lectures and practice work. It is coupled with instruction on the compilation of balance sheets in proper form, together with profit and loss statements and supporting schedules. Thus a student is able to see the exact effect of each item of expense or income on the net profits of the business, or on its assets and liabilities, and can better judge of their relative importance. Accounting methods of handling charges incident to a manufacturing business are considered in lectures, and elaborated by actual practice.

Cost accounting forms an important part of this subject, and gives a knowledge of the various methods of distributing the proper proportion of wages, overhead expenses, etc., in ascertaining the cost of the finished product.

During the summer preceding this work of the fourth year the student is required to work up a simple bookkeeping set, thus saving valuable time during the school year, and effectively preparing the ground for the instruction work.

BUSINESS LAW. — Under this subject are given lectures, supplemented by the use of suitable texts, on the law governing contracts, negotiable instruments, sales, bills of lading, real estate and corporation.

PATENT LAW. — During the fourth year a course of six lectures is given by a practicing patent attorney of Lowell. This course takes up the elements of patent law, and is intended to give the student a guiding knowledge of the subject.

[Course VI.]

Mill Engineering — B-21.

PREPARATION: B-3, B-4, B-10, B-17.

This work covers a wide range of subjects and is of the most practical character possible. All of the student's previous work in engineering and his knowledge of the textile processes are here brought together in the consideration of the larger problems of mill design, construction and organization. A

detailed study is made of the most modern types of mill buildings, including all calculations and drawings. Practice is also given with the engineer's transit and level in plane surveying, setting batters, linings and leveling shafting.

The modern methods of power transmission and the proper arrangement of textile machinery are also given careful consideration. The problems are in every case taken from actual conditions in mills already built or in process of construction. The question of mill heating, ventilation, lighting, humidification and fire protection is also studied, and the time spent in the drawing room enables the student to work out nearly all of the more important problems involved in the design of an entire textile mill plant. The close relation existing between proper plant design and economical production is also considered.

[Courses I, II, VI.]

CHEMISTRY AND DYEING DEPARTMENT — C.

Elementary Chemistry (Inorganic and Organic Chemistry) — C-1.

PREPARATION: ADMISSION REQUIREMENTS.

Instruction in Elementary Chemistry extends through the first year, and includes lectures, recitations and a large amount of individual laboratory work upon the following subjects: —

CHEMICAL PHILOSOPHY. — Chemical action, chemical combination, combining weights, atomic weights, chemical equations, acids, bases, salts, Avogadro's law, molecular weights, formula, valence, periodic law, etc.

NON-METALLIC ELEMENTS. — Study of their occurrence, properties, preparations, chemical compounds, etc.

METALLIC ELEMENTS. — Study of their occurrence, properties, metallurgy, chemical compounds, etc.

The students take up, as thoroughly as time will permit, the qualitative detection of the more common metals and non-metals, with practical work.

THE HYDROCARBONS AND THEIR DERIVATIVES. — Study of their occurrence, properties, preparations and uses. This work, although elementary in character, is of sufficient breadth to prepare the student understandingly for the work with artificial dyestuffs which follows.

[All courses.]

Qualitative Analysis — C-2.

PREPARATION: C-1 TAKEN SIMULTANEOUSLY.

Qualitative Analysis is studied during the second term of the first year. The work consists of lectures, recitations and laboratory work. The student must become familiar with the separations and the detections of the common metals and acids by the analysis of a satisfactory number of solutions, salts, alloys and pigments. At intervals during the term short laboratory tests are given as well as the regular written examinations.

No pains are spared to make the course as valuable to the student as possible, and to encourage only thorough and intelligent work.

When sufficiently advanced, students take up the examination of various products with which the textile chemist must be familiar, such as testing mordanted cloths, pigments and the various dyeing reagents.

During the latter part of this course a certain amount of time is devoted to the preliminary operations of quantitative analysis, such as the precipitation

and washing of such substances as barium sulphate, magnesium ammonium phosphate and calcium oxalate, although no weighings or actual determinations are made.

A student's marks in this subject depend as much upon the neatness and care used in manipulation as upon the actual results obtained.

[Course IV.]

Stoichiometry — C-3.

PREPARATION: B-1, C-1.

This subject is taken during the second half of the first year, and is continued throughout the second year as an adjunct to Quantitative Analysis. The application of the metric system is thoroughly studied, and problems are worked involving the expansion and contraction of gases, determination of empirical formulæ, combining volume of gases and quantitative analysis.

[Course IV.]

Advanced Inorganic Chemistry — C-4.

PREPARATION: C-1.

The whole subject of Inorganic Chemistry is reviewed during the second year, and many advanced topics are introduced which were necessarily omitted from the first-year course in General Chemistry.

[Course IV.]

Advanced Organic Chemistry — C-5.

PREPARATION: C-1.

In this course, which consists of lectures and recitations, the principles of organic substitution and synthesis are thoroughly discussed, and as many illustrations are used as time will permit, particularly such as are applied in the arts. The aliphatic series of hydrocarbons and their derivatives are studied for about twenty weeks, the remainder of the time being devoted to the benzene series. The aim of the course is to lay a broad foundation for the study of the chemistry of the artificial dyestuffs. Students are required to work out problems in the synthesis of various compounds, in order to become familiarized with equation writing.

[Course IV.]

Quantitative Analysis — C-6.

PREPARATION: C-2, C-3.

During the second year the principles of analytical work are thoroughly taught, the work being based on Talbot's "Quantitative Chemical Analysis." Gravimetric analysis is studied during the first term, and volumetric analysis during the second term. The samples analyzed include salts, ores, minerals, bleaching powder and alkalis. Frequent recitations are held for the discussion of methods and the solution of stoichiometrical problems. Students are encouraged to read the standard works and magazines on chemical subjects, in order to cultivate broad views of the science.

[Course IV.]

Quantitative Analysis — C-7.

PREPARATION: C-6.

This course consists chiefly of technical analysis, the principal consideration being the analysis of water, alum, ammonia, soaps, coal, indigo, tannin and the ultimate analysis of organic compounds, as well as the examination of acids, alkalies, oils, scouring materials and such substances as starches, gums and other thickeners, and the detection of adulterants.

No pains are spared to give the student the benefits of all the latest researches along the lines of industrial analytical methods, and original work is encouraged in all.

[Course IV.]

Physical Chemistry — C-8.

PREPARATION: C-4, C-5, B-11.

This subject is studied during the third and fourth years. It includes the principles of calorimetry, specific heat, vapor density, the various methods of determining molecular weights, laws of solutions, electrolytic dissociation, theories of precipitation, thermo-chemistry, surface tension, etc. The student is required to work out a large number of problems introduced by the subject.

[Course IV.]

Textile Chemistry and Dyeing — C-9.

PREPARATION: C-1, B-3, B-7.

The outline of the lecture course which is given during the first term of the second year is as follows:—

TECHNOLOGY OF VEGETABLE FIBERS. — Cotton, linen, jute, hemp, china grass. Chemical and physical properties, chemical compositions, microscopical study, and their action with chemicals, acids, alkalies and heat.

TECHNOLOGY OF ANIMAL FIBERS. — Wool, mohair, silk. Chemical and physical properties, chemical compositions, microscopical study, and their action with chemicals, acids, alkalies and heat.

TECHNOLOGY OF ARTIFICIAL FIBERS. — Study of the various forms of artificial silk, the process of manufacture, their properties and action with chemicals, acids and heat.

OPERATIONS PRELIMINARY TO DYEING. — Bleaching of cotton and linen; wool-scouring; bleaching, fulling and felting of wool; carbonizing; silk-scouring and bleaching; action of soap.

The bleaching of cotton cloth, yarn and raw stock is studied at length with detailed description of the various forms of kiers and machinery used; also the action of the chemicals used upon the material, and the various precautions that must be taken in order to insure successful work.

Under this heading is also included an exhaustive study of the reagents used in the emulsive wool-scouring process, and their action upon the fiber under various conditions; also the most successful of the solvent methods for degreasing wool.

WATER AND ITS APPLICATION IN THE TEXTILE INDUSTRY. — Impurities present, methods for detection, their effect during the different operations of

bleaching, scouring, dyeing and printing, and the methods used for their removal or correction.

The important subject of boiler waters is also studied under this heading, with a full discussion of the formation of boiler scale, its disastrous results, and the methods by which it may be prevented.

MORDANTS AND OTHER CHEMICAL COMPOUNDS USED IN TEXTILE COLORING AND CLASSIFIED AS DYESTUFFS. — Theory of mordants, their chemical properties and application, aluminum mordants, iron mordants, tin mordants, chromium mordants, organic mordants, tannin materials, soluble oil, fixing agents, leveling agents, assistants, and numerous other compounds, not dyestuffs, that are extensively used in the textile industry.

Under this heading are included the definitions of various terms and classes of compounds used by textile colorists, such as color lakes, pigments, fixing agents, developing agents, mordanting assistants, mordanting principles and leveling agents.

THEORY OF DYEING. — A discussion of the chemical, mechanical, solution and absorption theories, and the various views that have been advanced by different investigators of the chemistry and physics of textile coloring processes.

Under this heading are discussed the general methods of classifying dyestuffs and the definitions of such terms as textile coloring, dyeing, textile printing, substantive and adjective dyestuffs, monogenetic and polygenetic dyestuffs.

NATURAL ORGANIC COLORING MATTERS. — Properties and application of indigo, logwood, catechu or cutch, Brazil wood, cochineal, fustic, tumeric, madder, quercitron bark, Persian berries, and other natural dyestuffs that have been used within recent years by textile colorists.

MINERAL COLORING MATTERS. — Under this heading are discussed the properties of such inorganic coloring matters and pigments as chrome yellow, orange and green, Prussian blue, manganese brown, and iron buff.

ARTIFICIAL COLORING MATTERS. — General discussion of their history, nature, source, methods of manufacture, methods of classification and their application to all fibers.

Special study of basic coloring matters, phthalic anhydride colors, including the eosins and phloxines; acid dyestuffs, Janus, direct cotton, sulphur and mordant colors, including the alizarines and other artificial coloring matter requiring metallic mordants; mordant acid and insoluble azo colors, developed on the fiber; reduction vat colors, aniline black and other artificial dyestuffs not coming under the above heads.

As each class of dyestuffs is taken up, the details of the methods of applying them upon all the different classes of fabrics and in all the different forms of dyeing machines are thoroughly discussed; also the difficulties which may arise in their application, and the methods adopted for overcoming them.

MACHINERY USED IN DYEING. — A certain amount of time is devoted to the description of the machinery used in the various processes of textile coloring, which is supplemented as far as possible by the use of charts, diagrams and lantern slides.

Most of the important types of dyeing machines are installed within the dyehouse of the school, and the students can be taken directly from the lecture room and shown the machines in actual operation.

[All courses.]

Dyeing Laboratory — C-10.

PREPARATION: C-9 TAKEN SIMULTANEOUSLY.

Besides lectures and recitations upon the subject of Textile Chemistry and Dyeing, practical laboratory work is required. By the performance of careful and systematic experiments the student learns the nature of the various dyestuffs and mordants, their coloring properties, their action under various circumstances, and the conditions under which they give the best results. The more representative dyestuffs of each class are applied to cotton, wool and silk, and each student is obliged to enter, in an especially arranged sample book, a specimen of each of his dye trials with full particulars as to the conditions of experiment, percentage of compounds used, time, temperature of dye bath, etc.

For convenience and economy most of the dye trials are made upon small skeins or swatches of the required materials, but from time to time students are required to dye larger quantities in the full-sized dyeing machines which are described elsewhere.

By the use of a small printing machine the principles of calico printing are illustrated, and by means of the full-sized dyeing machines and vats the practical side of the subject is studied. It is the constant endeavor of those in charge to impart information of a theoretical and scientific character that will be of value in the operation of a dyehouse.

[Course IV.]

Industrial Chemistry (Lecture) — C-12.

PREPARATION: C-4, C-5.

During the whole of the third year lectures and recitations are held in industrial chemistry, the course in general following "Thorpe's Outline of Industrial Chemistry." Particular attention is paid to those subjects which are of special interest to the textile chemist, as oils, soaps, gas and coal-tar industry, building materials, and the manufacture on a large scale of important chemical compounds, such as the common acids and alkalies, bleaching powders, various mordants, etc. The course is illustrated as far as possible with specimens, diagrams and charts, and the students are given an opportunity to visit some of the industrial establishments in the vicinity of Lowell and Boston.

[Course IV.]

Industrial Chemistry (Laboratory) — C-13.

PREPARATION: C-6, C-12.

Special attention has been given to this subject because it is considered extremely important in the study of chemistry in general, and of textile chemistry in particular. During the third year considerable time is spent in the laboratory in the actual manufacture, from raw materials, of the chemical compounds used in textile work. Each student is required to make careful record of all of the crude materials used, as starting points, and to carry the various processes through carefully with the view of producing as great and pure a yield of each substance as possible. Industrial chemistry not only involves the application of the principles of both inorganic and organic chem-

istry, but of analytical work as well, for the purity of the compounds produced must be tested after their manufacture.

In addition to the general work in this subject, each student is required to make a special study of the manufacture of some chemical from raw materials in considerable quantity (20 to 25 pounds), making a complete quantitative analysis of all raw materials used and of the finished product, accounting for everything throughout the process, with the object of producing as near the theoretical yield as possible. The student is charged with the amount of raw material at market prices, and the finished product is bought back by the school.

Recently much new apparatus has been added to the Industrial Chemistry Laboratory, and it is now believed to be one of the most complete of its kind. The present equipment allows a comparatively large quantity of material to be handled at one time.

[Course IV.]

Advanced Textile Chemistry and Dyeing — C-14.

PREPARATION: C-9, C-10.

This is a continuation of the Textile Chemistry and Dyeing Course of the second year, and includes a review of the second year's work in this subject, with the introduction of many advanced considerations, and, in addition, the following subjects:—

CLASSIFICATION AND CONSTRUCTION OF ARTIFICIAL DYE STUFFS.—A study from a more advanced standpoint of the classification and constitution of artificial dyestuffs, including the various methods used in their production, also the orientation of the various groups which are characteristic of these compounds, and their effect on the tinctorial power of dyestuffs.

The object of this study is to give the student a more complete knowledge of the artificial dyestuffs from the color manufacturer's point of view, which will prove of particular value to those who intend later to enter the employ of dyestuff manufacturers or dealers.

COLOR MATCHING AND COLOR COMBINING.—A study of that portion of physics which deals with color and the many color phenomena of interest to the textile colorist. The lecture work is supplemented with the practical application of the spectroscope and tintometer, and much practice in the matching of dyed samples of textile material.

The primary colors both of the scientist and textile colorist, the results of combining coloring lights and pigments, and such subjects as color perception, color contrast, purity of color, luminosity, hue, color blindness, dichroism, fluorescence, and the effect of different kinds upon dyed fabrics, are discussed under this heading.

Each student's eyes are tested for color blindness early in the course, in order that he may be given an opportunity to change his course if his eyes should prove defective enough to interfere with his work as a textile colorist.

A dark room has been provided where various experiments in color work and color matching may be performed.

DYE TESTING.—This subject includes the testing of several dyestuffs of each class, subjecting them to the common color-destroying agencies; the determining of their characteristic properties, and their action towards the different fibers; also the determining of the actual money value and coloring power of dyestuffs in terms of a known standard.

Each student is required to make a record of each color tested upon an especially prepared card, which furnishes a permanent record of all dyestuffs, their dyeing properties, fastness to light and weather, washing, soaping, fulling, perspiration, bleaching, steaming, ironing, rubbing, acids and alkalis.

UNION DYEING. — A study of the principles involved in the dyeing of cotton and wool, cotton and silk, and silk and wool union materials in the production of solid and two-color effects.

TEXTILE PRINTING. — A thorough study of the whole subject of textile printing, each student being required to produce individually no less than twenty different prints, including the following styles: pigment style, direct printing style, steam style with tannin mordant, steam style with metallic mordant, madder or dyed style, the ingrain or developed azo style, discharge dye style, discharge mordanted style, resist style, indigo printing, aniline black printing.

The different parts of the calico printing machine are thoroughly studied; also the precautions which must be considered in its use, and the arrangement of the dyeing apparatus which must accompany such a machine.

Special attention is paid to the methods of mixing and preparing the various color printing pastes that are used in the above work upon a manufacturing scale as well as experimentally in the laboratory.

COTTON FINISHING. — A study of the various processes of finishing cotton cloth and the different materials used therein. The work involves the discussion of the various objects of cotton finishing and such operations as pasting, damping, calendering, stretching, stiffening, mercerizing, beetling and filling, and the various machines used for carrying out these processes.

MILL VISITS. — During the third and fourth years visits are made to some of the large dyehouses, bleacheries and printworks in the vicinity.

[Course IV.]

Organic Chemistry Laboratory — C-15.

PREPARATION: C-4, C-5, C-6, C-9.

This course, while including practice in the usual methods of organic analysis, and giving excellent training in the principles and manipulations of general organic synthesis, is especially devoted to the synthetic dyestuffs. The student not only prepares many of the representative dyestuffs, but, what is far more important, he carries out all the operations, beginning with coal tar itself. Thus, instead of merely coupling two or more of the foreign imported intermediate products to make a dyestuff, he starts with the basic substances obtained from the coal tar, and makes his own intermediate products. As far as is possible the student will be made acquainted with the problems which might arise in a dyestuff factory, and an excellent opportunity is presented for original work.

[Course IV.]

Engineering Chemistry — C-16.

PREPARATION: C-4, C-5, C-6.

A series of lectures is given upon the general subject of Engineering Chemistry, which include particularly the consideration of fuels, oils and water from the chemical engineer's standpoint. The elements of chemical engineering are also considered to such an extent as time will permit.

[Course IV.]

Industrial Analysis — C-17.

PREPARATION: C-6.

In conjunction with the lectures in engineering chemistry there is required a specified amount of laboratory work in the Industrial Analysis Laboratory, which has been recently thoroughly equipped with the latest and best apparatus for fuel and oil analysis.

[Course IV.]

Microscopy and Photomicrography — C-18.

PREPARATION: B-11, C-4, C-5, C-6, C-9.

The value of the microscope in the detection and examination of the various fibers cannot be overestimated, and often facts may be discovered, and conclusions drawn, which could be arrived at in no other way.

The students in this course are given as much work with the microscope as time will permit. They receive instruction in the use of the high-grade microscopes, and not only have practice in the examination and detection of the fibers, but are required to become proficient in the preparation of permanent slides.

Opportunity is also given for students to take photomicrographs of fibers and the various slides which they may prepare. A special dark room has been provided for this purpose.

[Course IV.]

Advanced Dyeing Conference — C-19.

PREPARATION: C-9.

During the latter part of his course each student will be required to write, for presentation before the other members of his class, a paper upon some assigned subject of general interest. After presentation the subject will be open to discussion and question.

The object of this conference is twofold. First, to give the student experience and practice in systematically looking up an assigned subject, and presenting it before others; and secondly, to bring before the class a greater variety of subjects with more detail than could be covered by the general lectures of the course.

[Course IV.]

Advanced Organic Chemistry (Dyestuffs) — C-20.

PREPARATION: C-15.

This course consists of an advanced study of the coal-tar coloring matters, their chemistry, relations of their composition to their coloring power, and the chemistry of their preparation.

[Course IV.]

Technical German — C-21.

PREPARATION: E-3, C-4, C-5, C-9.

This course consists of the reading of German technical literature, with the object of familiarizing the student with the current German publications in textile chemistry and coloring.

[Course IV.]

Thesis — C-22.

Before graduation the student must present a thesis which shall consist of a report of some original investigation or research that he has conducted while at the school.

A relatively large number of hours are specially set aside for this work, and students are encouraged to select some object for their investigation which shall be of practical as well as theoretical interest.

[Course IV.]

TEXTILE DESIGN AND WEAVING DEPARTMENT — D.**Textile Design — D-1.**

During the first year instruction is given in the subject of classification of fabrics, use of point or design paper, plain fabrics, intersection, twills and their derivation, sateen, basket and rib weaves, checks and stripes, fancy weaves, including figured and colored effects; producing chain and draw from design, and *vice versa*; extending and extracting weaves.

[First term, all courses.]

[Second term, Courses I, II, III, VI.]

Decorative Art — D-1.

The instruction in this subject is given in connection with Textile Design, and is conducted entirely by class work. During the first term freehand drawing is taught by means of plates and models, and practice in coloring is given in conjunction with this work.

Practice in lettering, spacing and general arrangement of designs and sketches is given. The engineering alphabet is used in all work.

During the second term instruction is given in drawing, sketching, coloring and designing, with reference to their application in textiles. Good examples of applied design in textiles, as well as in other branches, are used as a basis for modified designs selected and composed by the student. This stimulates originality as well as teaches the student to appreciate good designs and color.

Cloth Analysis — D-1.

In the first year this subject takes up in a systematic manner the analysis of samples illustrating the various cloth constructions for the purpose of determining the design of the weave and the amount and kind of yarns used, and forms the basis of calculation in the cost of reproducing any style of goods. The various topics discussed are reeds and setts; relation and determination of counts of cotton, woolen, worsted, silk, and yarns made from the great variety of vegetable fibers; grading of yarns, folded, ply, novelty and fancy

yarns; application of the metric system to yarn calculation; problems involving take-up, average counts, determination of counts of yarn, and weight of yarn required to produce a given fabric.

[First year, all courses.]

Hand-Loom Weaving — D-1.

During the first year the work in hand-loom weaving is taken in connection with design and analysis, and consists largely of picking out patterns and reproducing them in the loom. Instruction is also given in hand dressing, combing, beaming, drawing-in and building harness chains for dobby work.

[First term, all courses.]

[Second term, courses I, II, III.]

Textile Design — D-2.

FOR COTTON GOODS — PREPARATION: D-1.

During the second year consideration is given to fancy and reverse twills, diaper work, damasks, skip weaves, sateen fabrics with plain ground, backed fabrics, and multiple ply fabrics. Students are required to make original designs and put the same into the loom. Special attention is given to the consideration of color effects.

The analysis of these fabrics forms a part of the course in design. This also includes the necessary calculations required to reproduce the fabric or to construct fabrics of similar character.

[Courses I, III, VI.]

Textile Design — D-3.

FOR WOOLEN AND WORSTED GOODS — PREPARATION: D-1.

During the second year the instruction given includes warp and filling backed cloth, figured effects produced by extra warp and filling, double cloths, multiple ply fabrics, cotton warps, blankets, bath robes, crêpes, filling reversible, Bedford cords, imitation furs, crêpons, matelasse and imitations, double plain, ingrains, velvets, corduroys, overcoatings, trouserings.

The analysis of these fabrics, together with the consideration of the shrinkages and dead loss in all fabrics, theory of diameter of yarns, and costs of mixer blends, is a part of this course.

[Courses II, III, VI.]

Decorative Art — D-4.

PREPARATION: D-1.

The work of the second year is similar to that of the previous year, but is more advanced and specific. More original work is required as well as copying and composition work.

[Course III.]

Textile Design — D-6.

PREPARATION: D-2 OR D-3.

The advanced work takes up the more complicated weaves adapted to harness work, and leads into leno and Jacquard designs. The following is a brief list of the subject heads, which will give some idea of the course: double plain cloths, ingrains, tricot, chinchilla, tapestry, blankets, upholsteries, spot weaves, pile or plush, crêpon, matelasse and its imitations, piqué, Mar-seilles, quilting, and miscellaneous designs for Jacquard, leno, fustian, tissue fabrics and lappets.

The same plan is pursued during this year as in the second year, — that of requiring the student to make original designs and to weave the same.

[Courses I, II, III, VI.]

Cloth Construction — D-7.

PREPARATION: D-2 OR D-3.

The work includes the application of the different weaves and their combinations in the productions of fancy designs, both modified and original; the calculation involved in the reproduction of standard fabrics changed to meet varying conditions of weight, stock, counts of yarn and value; and the discussion of the breaking strength of fabrics and relationship of the construction of the fabric to breaking strength.

Instruction in this subject, which is given by classroom work, is intended to bring together the principles considered under the subject of design, cloth construction, weaving and yarn making of previous years, and to show the bearing each has in the successful construction of a fabric.

[Courses I, II, III, VI.]

Decorative Art — D-8.

PREPARATION: D-4.

Original designs and sketches for particular grades of goods and the study of color effects form the important part of the third-year course. It should be understood that work in decorative art is carried on in conjunction with textile construction and weaving, particularly on the Jacquard loom. Designs of merit are carefully developed in detail and woven into cloth.

[Course III.]

Decorative Art for Special Students.

This course is planned to give a student a working knowledge and appreciation of design. The first and second years are devoted to a general study of design, color, perspective, lettering and rendering. Drawings are made in the historic styles for all materials, — wood, gold, silver, copper, brass, leather, fabrics, wall papers and glass.

In the third year students should specialize and devote their attention to the material in which they expect to work.

Power Weaving — D-9.

PREPARATION: D-1. TAKEN SIMULTANEOUSLY WITH B-5.

In connection with the work in Textile Design and Cloth Analysis practical work is carried on upon the power looms. This includes the preparation of warps, beaming, dressing, sizing, drawing-in and making of chains, the cutting and lacing of cards, spooling and quilling and the machinery for the same. A study is made of warpers and sizing machines, both for cotton and woolen. Lectures are given to correspond with the progress of the student in the Power Weaving Laboratory covering the following subjects: loom adjustments, chain building, shuttle changing looms, dobby looms, single and double acting dobbies, handkerchief motions, leno weaving, center selvedge motions, filling changing looms, oscillating reeds, lappet motions, various shaker motions, towel and other pile cloth weaving, Jacquard looms, single and double lift leno Jacquards, Jacquards of special design, tying up Jacquard harness. The consideration of the mechanical operation and design of the special mechanisms and the calculations involved are taken up by the Engineering Department in the Course of Weaving Mechanism.

(Courses I, II, III, VI.)

Power Weaving — D-10.

PREPARATION: D-9, D-2, OR D-3.

Instruction is given in weaving on fancy woolen and worsted looms, single and double acting dobbies, leno weaving, various shaker motions, lappet loom weaving, double and single lift Jacquard looms, tying up Jacquard harness, leno Jacquard, harness and box chain building; warp preparation for woolen and worsted and cotton; formulas for making up different kinds of sizing. Lectures are given to correspond with the same.

[Courses I, II, III, VI.]

LANGUAGE AND HISTORY DEPARTMENT — E.**English — E-1.**

PREPARATION: ADMISSION REQUIREMENTS.

A technically trained man should be able to express himself clearly, forcibly and fluently, as inability to do so will be a serious handicap to him in after life. The object of the English course is to develop the student's power of expression by a thorough study of the principles of advanced rhetoric and composition, and by constant writing of themes illustrative of the four forms of discourse, viz., description, narration, exposition and argumentation. In addition to the study of rhetoric and composition and the writing of themes, several classics such as are not read in the preparatory schools are studied and discussed.

[All courses.]

Elementary German — E-2.

PREPARATION: ADMISSION REQUIREMENTS.

This course is intended for first-year students who offer French as an entrance requirement. The work is elementary in character, and much time is devoted to the study of the rudiments of German grammar with practice in

composition. During the latter part of the year considerable attention is given to the reading of ordinary German prose, which serves as an additional preparation to the student for the later reading of works along scientific and industrial lines.

Advanced German — E-3.

PREPARATION: E-2.

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year. The work consists of the study of some of the more advanced principles of grammar, and especially of the reading of scientific German dealing with a variety of subjects, and the translation of commercial German.

[Courses IV, VI.]

Elementary French — E-4.

PREPARATION: ENTRANCE REQUIREMENTS.

This course is intended for first-year students who offer German as an entrance requirement. The work is elementary in character, and much time is devoted to the study of grammar and composition. Facility in translation is acquired by a considerable amount of reading from general or scientific sources.

Advanced French — E-5.

PREPARATION: E-4.

For students who are pursuing a degree course the elementary course of the first year is continued throughout the second year, and the work is devoted almost entirely to the translation of scientific French.

[Courses IV, VI.]

Industrial History — E-6.

PREPARATION: ADMISSION REQUIREMENTS.

The economic history of a nation is not less interesting or dramatic than its political history, while it is absolutely essential to a thorough understanding of modern business conditions. The object of this course, which is intended for second-year students, is to trace the development of the three leading industrial nations of the world, viz., the United States, England and Germany, from simple, isolated agricultural communities to the complex industrial and commercial society of to-day. The course consists of weekly lectures supplemented by textbook reading. Among the topics treated are natural resources; colonization, territorial expansion; manufactures; agriculture; finance; commerce; transportation; revenue tariffs; monopolies; governmental regulation; organization of labor; industrial legislation; immigration, conservation; contemporary problems. During the year each student will be required to write two or more theses on subjects connected with industrial history, in order that he may have practice in research work and also may continue his training in English.

[All courses.]

Economics — E-7.

PREPARATION: E-1, E-6.

This course consists of lectures supplemented by recitations based upon both the lectures and a textbook. The character of the course is descriptive rather than theoretical, and the aim is to acquaint the student with the accepted principles of economics and some of their applications to industrial conditions.

Among the topics discussed are the nature and scope of economics; the evolution of economic society; the three factors of production, land, labor and capital; the four elements in distribution, rent, wages, interest and profits; business organization; value and price; monopoly; money, credit and banking; international trade; protection and free trade; transportation; insurance; economic activities of municipalities; and public finance. In short, the course deals with the fundamental principles that underlie a wide range of activities.

[Courses IV, VI.]

COTTON DEPARTMENT — F.**Cotton Yarn Manufacturing — F-1.**

PREPARATION: B-1, B-3, B-7.

Instruction is given by means of lecture and laboratory work. The outline of the course is as follows: —

FIBER. — Before taking up the details of the operation of manipulating the fiber into yarn, a careful study is made of the characteristics and classification, both botanically and commercially, of the many varieties of the cotton fiber. Methods employed in cultivating, marketing, grading and stapling are considered, and under these heads a detailed study is made of the types of gin employed.

OPENING AND PICKING. — Instruction in the preliminary operation of opening and picking covers the mechanical construction of the machines, their parts and adjustments, as fully as the manufacturing results accomplished by the machines. This includes such construction details as evener, lap measuring and safety stop motion, grids, cleaning trunks, beaters, etc.; also operation details which involve the adjustment of waste, drafts and character of laps.

CARDING. — The process of carding is considered one of the most important, and proper time is devoted to the construction and operation of cards that the student may be familiar with the various parts of the card and the function and design of each. The construction and application of card clothing, as well as the methods of grinding, form a part of the work.

DRAWING. — Under this head is taken up the theory of doublings and their effect upon the quality of roving and yarn. Like previous and subsequent processes the machine construction forms an important part of the work. Proper stress is paid to such subjects as stop motions, drawing rolls and their covering, cleaners and evener motions.

ROVING PROCESSES. — Under this head are studied the various machines known as the slubber, intermediate, fine and jack fly frames. The relative motion of the various parts of these machines is so complex that a good oppor-

tunity is here presented to fix in the student's mind the application of certain mechanical principles that are used in other departments and upon other machines in the manufacture of textile material. With each process of yarn manufacture are explained the systems of sizing and numbering, and under this head are taken up both the metric and English systems.

RING SPINNING AND TWISTING. — The consideration of spinning yarn by the ring frame method involves a knowledge of the uses to which the yarn is to be put, subsequent methods of handling that proper roving may be selected, suitable amounts of draft and twist provided, correct size of rings and travelers selected, building motions suitably adjusted, etc. The operation of twisting yarns is so closely related to spinning by the ring method that it is studied at the same time. This opens an almost limitless field of novelty yarn manufacture, and offers a very good opportunity to derive new types of yarn or new mechanism to produce the effects. Yarn defects are studied with reference to the cause and remedy.

MULE SPINNING. — This method of spinning is very different from that of the ring frame, and the mechanical details are more complicated. The student is furnished with new means of producing yarns, and can compare the relative advantage of each method. A thorough understanding of mule spinning is perhaps more a study of mechanical motions and their functions. This results almost invariably in assisting the student to understand previous processes and machines better because of his work on the mule. It is the object to make clear to the student's mind the principles underlying the construction and operation of the parts that control the drawing, twisting, backing off, winding, together with such special motions and devices as are used upon the modern mule.

COMBING. — This process is explained by lecture work and by operation and assembling of the various types of combs in service in the laboratory. The object of combing is fully considered, and the different means employed on the many types of combers on the market is studied. This includes such types as the Heilman, New Whitin and Nasmith combers.

ORGANIZATION. — Following the detailed study of the individual processes it is necessary to consider the relation of each to the other, the programs, balance of production, cost of machinery for various counts, quantities and styles of yarns. Under this heading are also studied such subjects as depreciation of machinery, cost systems, economics, arrangement of machinery, power demands, etc.

[Courses I, III, VI.]

Knitting — F-2.

PREPARATION: F-1 or G-1.

This course, commencing with a study of hosiery yarns and their preparation for knitting, includes a study of the various stitches and their application in commercial fabrics; a study of the different knitting machines, including circular and flat spring and latch needle machines used in the manufacture of stockings, sweaters and underwear; and a study of looping and sewing machines. A part of the work consists of the assembling and adjusting of different types of knitting machines.

In addition, considerable time is spent in the analysis of knitted fabrics.

[Courses I, II.]

WOOLEN AND WORSTED YARNS — G.

Manufacturing — G-1.

PREPARATION: B-1, B-3, B-7.

RAW MATERIALS. — A study of raw materials which enter into the manufacture of woollen or worsted yarns, or are made into yarns by processes similar to those employed in the manufacture of woollen and worsted yarns, would include silk, mohair, alpaca, vicuna, cashmere, camel's hair, cotton, flax, hemp, jute and ramie. In connection with these are considered shoddy, noils, mungo and extracts.

WOOL SORTING. — Familiarity with the various grades and kinds of wool is obtained by lecture and by actual sorting of fleece wool under the direction of an experienced wool sorter. The various characteristics and properties are explained, as are also trade terms, such as picklock XXX, XX, $\frac{1}{2}$ -blood, $\frac{3}{4}$ -blood, $\frac{1}{4}$ -blood, delaine, braid, etc. Some skill is acquired in the estimation of shrinkage and in judging the spinning qualities.

WOOL SCOURING. — The object of scouring and the methods employed are explained, and this involves the consideration of the soaps and chemicals used in washing; also the waste products and their utilization. Actual work is done in scouring a commercial quantity of wool by machines that are made similar in operation to regular commercial machines. A study is made of the effect of the hardness of water upon soap; also tests are made to show this effect. At the same time the use of driers, their operation and regulation, is taken up, and the methods of carbonizing wool, noils, burr waste, rags, etc., are studied and practiced.

BURR PICKING, MIXING AND OILING. — In these processes, preliminary to carding, the students have an opportunity of mixing various colors of wools to produce different effects, and the influence of varying percentages of a given color in a mixture can be seen. Each student is required to make at least twenty sample mixes combining different colors and grades of stock, and to felt and mount the same. Under the subject of oils and emulsions are taken up the characteristics of various oils and the means employed to test these. The use of mixing and burr pickers is made clear.

CARDING. — The different systems of carding wool, depending upon whether it is to be made into woollen or worsted yarn, are fully explained, as is also the construction, setting and operation of the cards. A part of the work is the reclothing and grinding of the cylinders, strippers, workers, etc. The carding of suitable and commercial quantities of wool, and the further manufacture of it into yarn, serves to fix the principles of carding in the mind of the student, as well as to give him some skill in handling machinery. At the completion of this part of the work he is required to prepare and hand in a full description of the process of carding, including working drawings, sketches, etc., to fully explain the machines and the methods.

WOOLEN MULE. — The student studies thoroughly the operation of the mule as a whole, and acquaints himself with the various principal mechanisms, as, for example, the backing off and winding motions, the quadrant, builder-rail, faller regulation, etc. He is required to run the mule and later hand in a thesis describing in full the machine, its parts and their operation.

TOP MAKING AND COMBING. — This branch takes up, besides the carding

of the wool on a worsted card, the preparing processes; also gilling of the stock before and after combing. The construction of the gill boxes and combs is studied by lectures, and by dismantling and assembling these machines in the laboratories. Later, quantities of stock are made into top and then into yarn.

The Noble and Lister combs are studied, and the various calculations to determine draft, noiling, productions, etc., are made.

DRAWING AND SPINNING. — The equipment in the laboratory offers opportunity to make worsted yarn by either the Bradford or open drawing system or by the French system. The process includes the various machines in the successive steps of making Bradford spun yarn, and the functions of the different machines are studied. In the latter, or French system, the stock is run through the drawing machines, and the roving spun into yarn on the French mule. The same method of studying the mechanism and operations of these machines is followed as in the case of previous methods of instruction. The student by pursuing this course can compare the different methods of yarn manufacture and note the results of each.

With the instruction on the Bradford system is given work on the twistors and the effects that may be produced.

ORGANIZATION. — At the end of the course the layout of a properly balanced yarn mill is studied, and at the same time the cost of the machinery, depreciation, labor costs and machinery arrangements.

[Courses II, III, VI.]

Textile Testing — G-2.

PREPARATION: F-1 or G-1, D-6, D-7, D-9.

The object of this course is to familiarize the student with present-day methods of determining the physical properties of textile fibers, yarns and fabrics. The application of physical laws and methods of measurements, as studied in the Course of Physics, is used in the study of physical characteristics of textile material. The work is given to students in advanced courses, and consists of lecture and laboratory work. Reports are prepared from each experiment, giving the object of the experiment, method of procedure, observation and conclusions, in order that the student may acquire practice and understand the interpretation of data. A special testing laboratory has recently been constructed, and a considerable number of the best standard fiber, yarn and fabric testing instruments of German make have been imported. The laboratory is equipped with means of making and keeping the humidity constant, so that tests can be made under uniform or standard conditions of humidity and temperature.

FINISHING DEPARTMENT — H.

Woolen and Worsted Finishing — H-1.

PREPARATION: B-3, C-1, D-1, D-9.

The outline of this course, which is given by means of lecture and laboratory work is as follows: —

BURLING AND MENDING. — Under this head is taken up for consideration the examination of flannel as it comes from the loom; the construction, use

and location of the perch; the methods used in marking defects, measuring, weighing and numbering of cloths; also the methods of inspection for fancies, single cloths and double cloths. The object of burling, mending and the types of tables employed, the method of removing knots, runners, etc., the object of back shearing and the use of burling irons, the replacing of missing threads and the importance of sewing as a part of the finishing process, are all considered in detail. The removal of oil and tar spots as well as stains of various kinds is studied.

FULLING. — This branch covers a study of the conditions of the flannel as it comes from the loom, and the influence of oil, etc., upon the procedure. Considerable time is devoted to the various methods of producing a felt, the early types of stocks, hammer falling and crank stocks, and their modifications and development into the present type of rotary fulling mills of both the single and double variety. The details of construction in all machines are carefully taken up and include the design and composition of the main rolls, methods of covering, regulation and means of adjusting the pressure of traps and rolls, consideration of the shoes, the use and regulation of the various types of stop motion, the different types of stretchers, guide rolls and throat plates.

The theory of felt is taken up and the influence of pressure, moisture, heat, alkali and acid is considered, as well as the hygroscopic and felting properties of different wool fibers. The preparation of the flannel for the mill and the usual methods of determining shrinkages, as well as the various methods of soaping, are given careful attention. The preparation of various fulling soaps and the value of each for the production of various degrees of felt, as well as the determination of the proper amount of alkali for various goods, are carefully studied and demonstrated. The manipulation of the various kinds of goods in the mill, viz., all wool, shoddies and mixed goods, is studied in classroom and by operation in the mill.

The change in weight and strength for each operation is carefully considered, as is also the value of the flocks made in each. A study of the various methods of flocking, such as dry and wet, is considered in both class and machine rooms. In each operation the defects likely to materialize are studied, as well as the cause thereof, and various methods of modifying or lessening them.

WASHING AND SPECK DYEING. — This branch considers the scouring, rinsing and washing of goods both before and after the fulling process; the various types of washers; and the details of construction, such as suds box, rolls, etc. The theory of scouring, uses of Fuller's earth, salt solutions and sours on the different kinds of goods are made clear by practical work in the machine room, where the effects due to improper scouring, such as stains, cloudy effects, wrinkles and unclean goods, are demonstrated. The discussion of the necessity of speck dyeing follows naturally from the study of these matters, and includes methods of preparation, materials used, application and tests required.

CARBONIZING. — This is an important branch of finishing, and includes a study of the various carbonizing agents, methods of application, strength of solutions, and neutralizing, as well as the machines used. Stains and imperfections resulting from carbonizing are also considered. The drying and tentering machines and extractors employed are taken up at this point.

GIGGING, NAPPING AND STREAMING. — The construction in detail of the various types of gigs, nappers, steamers, wet gigs, rolling, stretching, crabbing and singeing machines is discussed, and their actions upon the cloth and the results obtained are explained.

Various methods of obtaining luster and the production of permanent finish are considered in connection with steaming and sponging.

BRUSHING, SHEARING AND PRESSING. — This includes as do the other branches a careful treatment of the machine employed, the preparation of the cloth for each process, the action of each machine in producing its part of the resultant effect. In manipulation of the shear consideration is given to its setting, grinding and adjustment. With the brushing machine the effect of steaming and moisture upon the luster and feel of the goods is shown. A study of the action of the presses, both plate and rotary, involves consideration of pressure, steaming, etc. Special processes to obtain particular effects are taken up, and the part played by each machine is explained. The details involved in handling cloth on a commercial scale, as, for example, measuring, weighing, ticketing, numbering and rolling, are also explained. The necessary calculation and the methods of finishing all grades of goods are considered from time to time during the year.

[Courses II, III, IV, VI.]

Cotton Finishing — H-2.

PREPARATION: B-3, C-1, D-1, D-9.

The outline of the course in the finishing of cotton fabrics is as follows: —

CLOTH ROOM. — Instruction of the various goods and the object thereof; construction of the various types of inspecting and trimming machines.

SHEARING. — The object. A consideration of the various types of shears for treating one or both sides at the same time; also the use of the usual cleaning devices, such as emery, sand and card rolls, beaters and brushes; grinding and the adjustment of the various parts.

The use of brushing and cleaning machines, rolling devices and calender attachments for gray goods.

SINGEING. — Developing and object of singeing; the construction of singers of all types, and for various purposes; the use of cooling tanks, steaming devices, rolling and brushing attachments.

Regulation of the flame for various goods, and adjustment of the parts; gas and air pressure, water-cooled rolls; the effect of moisture on the cost of singeing; the use of dry cans in connection with singeing; electric singeing.

WASHING. — Open width and string washers, their construction and operation; soaps, temperature, squeeze rolls; washing of various goods and the object thereof; stains.

NAPPING. — The object of napping and the usual method of treating goods; various types of nappers, single and double acting; felting nappers; construction, grinding and adjustment of various types.

WATER MANGLES. — Their object and the construction of various types; various rolls, iron, husk, etc.; scutchers, their object and constructions.

STARCH MANGLES. — The object and construction of all types of starch mangles for pure starch and filled goods; various types of rolls, brass, rubber, wood; action of doctor blades, etc.; regulation and object of pressure.

Methods of starching and finishing all standard goods, also a consideration of the various substances used, such as starch, softener and fillers; the preparation of starch and various methods of application.

DRYERS AND STRETCHERS. — Both horizontal and vertical, tenter frames, clips; the swing motion and the finishes thus produced; construction; spraying machines, belt stretchers, button breakers; their object and construction.

CALENDERS. — The object and construction of all types, including the regulation of pressure and nips for the production of various finishes; various types of rolls and their uses, — steel, husk and paper; the use of hot and cold rolls; chasing, friction, embossing and Schriners calenders, and the various finishes produced by each; production of watered effects; beetling machines.

Making up room, — yarding, inspecting; different types of folds; pressing, papering, marking.

[Courses I, VI.]

PLANT AND EQUIPMENT.

PLANT.—In locating the school at Lowell, which has been called the "Mother Textile City of America," considerable advantage is secured by close association with every branch of the industry, which utilizes almost every commercial fiber in the products of the great Merrimack Valley textile district.

Although the school was formally opened by Governor Roger Wolcott on January 30, 1897, in rented quarters in the heart of the city, it was not until January, 1903, that the first buildings of the present plant were ready for occupancy. On February 12, 1903, Governor John L. Bates dedicated the present buildings.

The site is a commanding one, consisting of about 15 acres at a high elevation on the west bank of the Merrimack River. It extends to and overlooks the rapids of Pawtucket Falls, which was the first water power in America to be used on an extensive scale to operate power looms. It was contributed by Frederick Fanning Ayer, Esq., of New York City, and the Proprietors of the Locks and Canals on the Merrimack River.

Southwick Hall, the main building, fronting on Moody Street, was contributed by the Commonwealth of Massachusetts and Frederick Fanning Ayer, Esq., and is a memorial to Royal Southwick, a leading textile manufacturer, a public man of earlier days, and a maternal ancestor of Mr. Ayer. It includes a central mass 90 by 90 feet, having three stories and two wings 80 by 85 feet each with two stories and well-lighted basements. The building is pierced in the center by an arched way from which access is had to the wings and to the central courtyard. The northern wing is occupied by the General Offices, Engineering and Finishing departments, and Library, while the southern wing is entirely occupied by the Chemistry and Dyeing departments.

Kitson Hall, dedicated to the memory of Richard Kitson, was contributed by Charlotte P. Kitson and Emma K. Stott, his daughters; the Kitson Machine Company of Lowell, founded by Mr. Kitson, was also a generous contributor. This hall makes a right angle with Southwick Hall, is 70 by 183 feet, and has two stories and a basement. The first floor is occupied by the Cotton Yarn and Knitting departments, while the basement contains the Mechanical and Electrical Engineering laboratories and the Machine Shop.

The Falmouth Street Building forms the third side of the quadrangle, and consists of three portions, one 60 by 75 feet, three stories, one 75 by 130 feet, three stories, and the head house 70 by 80 feet, three stories and basement. The building is occupied by the picker section of the Cotton Yarn Department, the Design and Power Weaving Department and by the Woolen and Worsted Yarn Department, and contains on the lower floors an equipment for the manufacture of wool yarn from the fleece to the finished yarn. The upper floors are occupied by a great variety of plain, dobby and Jacquard looms, and in a section of the building are the students' lockers and recreation rooms.

Colonial Avenue Building was erected in the summer of 1910 from plans prepared by the Engineering Department, which also had in charge the work of construction. The building completes the fourth side of the quadrangle, and in outward appearance corresponds to the architectural features of the other school buildings. It is a single-story building, and has the dimensions of 195 by 60 feet. Its interior is faced with cement brick made at the school during the progress of the work. These serve to give light reflecting walls which are advantageous for the work of the Wool Manufacturing, Cotton Finishing and Chemistry and Dyeing departments that occupy this building. The funds for this building were provided by the State of Massachusetts.

The buildings are all faced on the exterior with light brick with granite and Indiana limestone trimmings. They are of modern mill construction adapted to educational uses. The floor space of the several departments is as follows: —

	Square Feet.
Cotton Yarns and Knitting,	16,200
Woolen and Worsted Yarns,	28,160
Textile Design and Decorative Art,	16,806
General Chemistry and Dyeing Laboratories,	28,400
Finishing Cotton, Woolen and Worsted,	10,606
Power Weaving,	15,360
Textile Engineering,	24,297
Power plant,	10,047
Assembly and physical culture halls,	10,800
Entrances, corridors, stairways, etc.,	14,487

Additional floor space is devoted to Administration Offices, Library, classrooms, storerooms, etc.

EQUIPMENT. — The equipment of machinery, inventoried, at \$291,519.40, is most varied for textile educational purposes, and is being constantly augmented. The builders of the various machines installed keep in close touch with the school, adding to the machines such improvements as are made from time to time, and each year some new machine will be added by a manufacturer who finds it to his advantage to be represented here. This operates to the mutual advantage of student and manufacturer.

COTTON YARNS DEPARTMENT.

Ginning:

- One 50-saw gin made by Daniel Pratt Gin Company, Prattsville, Ala.
- One Prior roller gin.

Opening, picking and waste machinery:

An outfit of Kitson picking machinery from works of Saco-Lowell Shops, Lowell, Mass., including:

- One 40-inch two beater breaker lapper with automatic feeder.
- One 40-inch single beater intermediate finisher lapper with Perham & Davis sectional plate evener, apron to double four laps.
- One 40-inch single beater finisher lapper with Perham & Davis sectional plate evener, apron to double four laps, Kirschner patent carding beater.
- One roving waste opener.
- One thread extractor.

The power for this picker section is furnished through a Westinghouse 15-horse power, 220-volt direct-current motor.

Carding, combing and dyeing:

The following machinery made by the Saco-Lowell Shops, Lowell, Mass.:

One top flat card.	Two drawing frames.
Three revolving flat cards.	Stripping rolls, etc.
Two railway heads.	

Two of these cards form a unit of a waste carding equipment.

One of these cards is equipped with Chapman electric neutralizer, made by the Chapman Electric Neutralizer Company, Portland, Me.

From the Whitin Machine Works, Whitinsville, Mass.:

One 40-inch revolving flat card.	One 6-head ribbon lapper.
Card grinding rolls.	One 4-head ribbon lapper.
One sliver lapper.	One 2-head comber.
One 6-head comber.	One 8-head comber.

From the Mason Machine Works, Taunton, Mass.:

One sliver lap machine and one comber.

From John Hetherington & Sons, Ltd., Manchester, Eng.:

One 2-head comber and one model comber head.

Roving, spinning and twisting:

From Saco-Lowell Shops, Lowell, Mass.:

One slubber for waste spinning unit.	Three ring spinning frames.
One slubber.	One spinning mule.
One intermediate.	One spooler.
One fine frame.	One wet and dry twister.
One Jack frame.	

From Fales & Jenks, Pawtucket, R. I.:

One wet and dry twister.

From Draper Company, Hopedale, Mass.:

One wet and dry twister.

From Whitin Machine Works, Whitinsville, Mass.:

Three ring spinning frames.

From Woonsocket Machine and Press Company, Woonsocket, R. I.:

One intermediate fly frame.

From Asa Lees Company, Oldham, Eng., Wm. Firth Company, Agents:

One mule for fine spinning.

Miscellaneous machinery of this department includes:

From the Saco-Lowell Shops, Lowell, Mass.:

One reel and models of each of the following:

Fine fly frame.	Flat grinding device.
Fly frame compound.	Scroll setting device.
Card feed.	

From Draper Company, Hopedale, Mass.:

One Weeks banding machine and one Moscrop single-thread testing machine.

Miscellaneous machines:

One yarn inspection machine with blackboards.

Two Barber knotters. One power yarn tester.

Two yarn reels and grain scales. One twist counter.

From Howard Brothers, Worcester, Mass.:

Two exhibition boards, one of hand cards, and one of card clothing.

The power for the yarn section is furnished through one 10-horse power Allis-Chalmers motor, and one 15-horse power Allis-Chalmers motor.

Knitting Section.**Winding machinery:**

One universal winder, 6 spindles for cones and tubes.

One Payne bobbin winder.

One Foster winder, 10 spindles for cones and tubes.

Hosiery machines:

- One Acme full automatic $3\frac{1}{2}$ -inch cylinder, 160 needles.
- One Acme full automatic $3\frac{1}{2}$ -inch cylinder, 200 needles.
- One Mayo Model A full automatic $3\frac{1}{2}$ -inch cylinder, 120 needles.
- One Mayo Model A full automatic $3\frac{1}{2}$ -inch cylinder, 200 needles.
- One Mayo Model C full automatic $3\frac{1}{2}$ -inch cylinder, 220 needles.
- One Scott & Williams new automatic $3\frac{1}{2}$ -inch cylinder, 176 needles.
- One Scott & Williams Model G $3\frac{1}{2}$ -inch cylinder, 220 needles.
- One Banner full automatic $3\frac{1}{2}$ -inch cylinder, 200 needles.
- One Brinton full automatic $3\frac{1}{2}$ -inch cylinder, 176 needles.
- One Branson hand machine, $3\frac{1}{2}$ -inch cylinder, 80 needles.

Machines in this group are equipped with special attachments for producing lace front work, high splicing, double soling and striped work:

- One Wildman ribber, $3\frac{1}{2}$ -inch cylinder, 160 needles.
- One Wildman ribber, $3\frac{1}{2}$ -inch cylinder, 176 needles.
- One Wildman fancy ribber, $3\frac{1}{2}$ -inch cylinder, 200 needles.
- One Wildman ribber, $3\frac{1}{2}$ -inch cylinder, 220 needles.
- One Wildman striping ribber, $5\frac{1}{2}$ -inch cylinder, 240 needles.
- One Brinton ribber, $3\frac{1}{2}$ -inch cylinder, 176 needles.
- One Brinton ribber, $3\frac{1}{2}$ -inch cylinder, 200 needles.
- One Brinton tie machine, $1\frac{1}{2}$ -inch cylinder, 100 needles.

Underwear machinery:

- One Crane spring needle machine, 19-inch cylinder, 1,040 needles.
- One Scott & Williams ribber, 19-inch cylinder, 12 cut.
- One Wildman ribber, 20-inch cylinder, 8 cut.

Flat machines:

- One Lamb glove machine, 8-inch bed, 6 cut.
- One Lamb knitting machine, 18-inch bed, 5 cut.
- One Lamb sweater machine, 24-inch bed, 4 cut.
- One Grosser sweater machine, 32-inch bed, 3 cut.
- One Grosser Jacquard machine, 16-inch bed, 10 cut.
- One Dubied scarf machine, 18-inch bed, 18 cut.

Finishing machines:

- One Grosser 2-thread looper, 22 point.
- One Beattie looper, 16 point.
- One Hepworth looper, 16 point.
- One Beattie looper, 3 point.
- Five Union special sewing machines for overseaming, double stitch covering, seaming and welting and vest finishing.
- Six Merrow sewing machines, including two shell stitch machines and three overseaming and crocheting machines.
- Three Singer machines for plain sewing, buttonholing and button sewing.
- The power for this section is supplied through a $7\frac{1}{2}$ -horse power, 220-volt Westinghouse motor.

WOOLEN AND WORSTED DEPARTMENT.**Wool sorting and grading:**

This room is thoroughly equipped with benches, baskets, etc., for sorting wool in a convenient manner, and in addition there are samples of all grades and types of wool and other fibers.

Scouring and carbonizing:

Wool scouring machinery, C. G. Sargent's Sons Corporation, Graniteville, Mass., consisting of:

- Cone duster for grease wool.
- Two scouring bowls, each 17 feet by 24 inches, with parallel rakes and automatic feeder for scouring bowls.
- One single apron dryer, with automatic feeder.
- Carbonizing screw acid tank and duster, with crush rolls.

Scouring and carbonizing — *Con.*

From North Chelmsford Machine Company:

One rinse box.

From Schaum & Uhlinger, Philadelphia, Pa.:

One hydro-extractor.

From C. S. Dodge, Lowell, Mass.:

One shoddy picker and one bagging stand.

The power for this section is supplied through a 20-horse power General Electric 220-volt motor.

Woolen.

Picking:

One Parkhurst Burr picker, Atlas Manufacturing Company, Newark, N. J.

One mixing picker, Davis & Furber Machine Company, North Andover, Mass., equipped with improved mixing picker feed and Spencer oiler, both made by George S. Harwood & Son, Boston, Mass.

Carding:

One set of woolen cards, including:

First breaker, second breaker and finisher, Davis & Furber Machine Company, North Andover, Mass.; this set of cards equipped with Bramwell first breaker feed (George S. Harwood & Son, Boston, Mass.); Torrance balling head and creel (Torrance Manufacturing Company, Harrison, N. J.) between first breaker and second breaker; Apperly feed (George S. Harwood & Son, Boston, Mass.) between second breaker and finisher; and combination rub rolls and apron condenser (Davis & Furber Machine Company, North Andover, Mass.) on finisher. These cards are for medium or coarse work.

One set of Davis & Furber woolen cards, including:

First breaker, second breaker and finisher. This set of cards equipped with Bramwell first breaker feed (George S. Harwood & Son, Boston, Mass.); Apperly feed with Kemp traveler (George S. Harwood & Son, Boston, Mass.) between first breaker and second breaker; Bates feed (E. V. Bates, Lowell, Mass.) between second breaker and finisher; and Davis & Furber double apron condenser on finisher. These cards are for fine work.

Both sets of cards are equipped with Chapman electric neutralizer, made by Chapman Electric Neutralizer Company, Portland, Me.

One sample mixing card, Torrance Manufacturing Company, Harrison, N. J.

Spinning:

One spinning mule, 120 spindles, Davis & Furber Machine Company, North Andover, Mass.; bobbin holders, supplied by American Bobbin Holder Company, West Medway, Mass.

One spinning mule, 120 spindles, Johnson & Bassett, Worcester, Mass.; bobbin holders supplied by Murdock & Geb, Franklin, Mass.

One 1907 fancy yarn twister, 20 spindles, Davis & Furber Machine Company, North Andover, Mass.

Card grinding:

One Roy grinding frame, B. S. Roy & Son, Worcester, Mass.

Two Roy traverse grinders, B. S. Roy & Son, Worcester, Mass.

One Entwistle traverse grinder, T. C. Entwistle Co., Lowell, Mass.

One complete set of carder's tools, W. H. Brown, Worcester, Mass.

Worsted.

Carding:

One 50-inch double-cylinder worsted card (4 licker-in), Davis & Furber Machine Company, North Andover, Mass., equipped with Bramwell feed, George S. Harwood & Son, Boston; also equipped with a Chapman electric neutralizer, Chapman Electric Neutralizer Company, Portland, Me.

Backwashing:

One double bowl, 5-cylinder backwasher, with gill box, Taylor-Wadworth & Co., Leeds, Eng., equipped with blueing motion, oiling motion, and Layland patent pressure motion.

Gilling:

One doubling balling head gill box (with double screws), Saco-Lowell Shops, Lowell, Mass.

One weigh gill box and creel, Saco-Lowell Shops, Lowell, Mass.

Combing:

- One baller (punch), Crompton & Knowles, Worcester, Mass.
 One Noble worsted comb, Crompton & Knowles, Worcester, Mass.

Gilling:

- One finishing can gill box, Hall & Stell, Keighley, Eng.
 One finishing balling head gill box, Hall & Stell, Keighley, Eng.

BRADFORD SYSTEM OF DRAWING, SPINNING AND TWISTING.

The following drawing, spinning and twisting machinery from Prince Smith & Son, Keighley, Eng.:

- | | |
|-----------------------------------|-------------------------------------|
| One revolving creel for 12 balls. | One double head can gill box. |
| One 2-spindle drawing box. | One 2-spindle gill box. |
| One 2-spindle weigh box. | One 2-spindle flyer spinner. |
| One 4-spindle first finisher. | One 12-spindle ring spinner. |
| One 12-spindle dandy reducer. | One 12-spindle 2-fold cap twister. |
| One 12-spindle cap spinner. | One 12-spindle 6-fold ring twister. |

The following drawing, spinning and twisting machinery from the Saco-Lowell Shops, Lowell, Mass.:

- | | |
|---|---|
| One 2-spindle drawing box. | One 8-spindle cone rover. |
| One 6-spindle second finisher. | One 48-spindle cap spinner, 5-foot end. |
| One 24-spindle dandy rover. | One 48-spindle cap spinner, 4-foot end. |
| One 6-spindle cone reducer. | One 48-spindle Boyd ring twister. |
| Yarn conditioning machine, C. G. Sargent's Sons Corporation, Graniteville, Mass. | |
| One 6-gang Universal winder, equipped for cones or straight tubes, Universal Winding Company, Boston, Mass. | |

One tape band sewing machine, the Singer Manufacturing Company, New York.

The power for this yarn section as well as for the Power Weaving Department is supplied through two 24-horse power Allis-Chalmers motors.

FRENCH SYSTEM OF DRAWING AND SPINNING.

The machinery made by the Société Alsacienne de Constructions Mécaniques, at Mulhouse, France, consists of the following:

- | | |
|---|--|
| Peigneuse-Laine modèle P. L. B. | Model P. L. B. comb with creel for 24 doublings. |
| Intersecting de 2 têtes. Pass. I and II après Peigneuses. | Intersecting gill box (2 heads). |
| Gill box (2 têtes). | Gill box (2 heads). |
| Étirage à Frottoirs (2 têtes). | First drawing (2 heads). |
| Étirage à Frottoirs (2 têtes). | Second drawing (2 heads). |
| Étirage à Frottoirs (2 têtes). | Third drawing (2 heads). |
| Étirage Réunion (4 peignes). | Reducer (4 porcupines). |
| Bobinier de Chûte (8 peignes). | Slubber (8 porcupines). |
| Bobinier (8 peignes). | First intermediate (8 porcupines). |
| Bobinier (8 peignes). | Second intermediate (8 porcupines). |
| Bobinier (8 peignes). | Rover (8 porcupines). |
| Finisseur (16 peignes). | Finisher (16 porcupines). |
| Self-acting à Filer (150 broches). | Self-acting worsted mule (150 spindles). |

The apparatus in this section for obtaining and preserving the requisite condition of humidity consists of twelve turbo humidifier heads from the G. M. Parks Company, Fitchburg, Mass., automatically controlled by a humidity regulator made by this same company. The compressed air for these heads is supplied by an Ingersoll-Rand 8 by 8 steam-driven air compressor located in power house.

The power of this section is supplied through a 15-horse power Allis-Chalmers 220-volt motor.

Textile Testing Laboratory.

Several years ago the importance of testing fibers, yarns and fabrics began to be appreciated, and through the generosity of a friend a beginning was made by the establishment of a laboratory where the physical properties of textiles may be determined and studied. To the original equipment have been added several pieces of apparatus, so that there is in the laboratory the following equipment:

One Bausch & Lomb D. D. microscope provided with regular eye pieces and objective for low power, high power or photographic work.

One eye piece micrometer.

One filar micrometer (1-inch equivalent eye piece) for refined diameter determinations.

One Standard glass stage with corrections from comparison against the international millimeter.

Complete outfit for mounting slides and for taking photomicrographs.

Camera lucida.

Microtome sectioning outfit.

One small skein testing machine.

One electric conditioning oven, Emerson Apparatus Company, Boston.

One single yarn testing machine, made by G. R. Smith & Co., Bradford, Eng.

One hydraulic cloth strength testing machine for 4-inch samples, made by G. R. Smith & Co., Bradford, Eng.

One hand cloth strength testing machine for 1-inch samples, made by Brown Brothers, Providence, R. I.

One Brown & Sharpe meter reel.

Three Lowinson's thread micrometers, Charles Lowinson, New York City.

One strength testing machine, made by Louis Schopper, Leipzig, Ger. Capacity, 500 kilograms for test pieces 50 millimeters in width, and from 100 to 400 millimeters in length. Provided with special jaws to test twine, strings, cords or fabrics.

One fiber testing machine, made by Louis Schopper. Capacity, 1 gram to 1.5 kilograms. Provided with jaws to test fiber or fine yarns.

One yarn strength testing machine, made by Louis Schopper. Capacity, 1,000 to 5,000 grams. Length of test pieces, 200 to 1,000 millimeters.

One yarn strength testing machine, made by Louis Schopper. Capacity, 5 to 30 kilograms. Test pieces, 500 millimeters.

One hygrometer, Dr. Koppe's system.

One accurate tread or pick counter.

One Universal quadrant scales for determining counts of yarn by the various yarn systems in use.

These last three pieces of apparatus are also made by Louis Schopper, Leipzig, Ger.

The laboratory has been constructed to give plenty of light. The temperature and humidity of the room are controlled by the automatic humidity and temperature regulator, made by the American Moistening Company of Boston, Mass.

Yarn weighing and testing:

From Lowell Scale Company:

One large platform scale.

From Howe Scale Company:

One dram scale.

One gram scale.

One ounce scale.

One pound and ounce scale.

Two yarn reels.

Complete set of roving cans from the Laminar Fibre Company, North Cambridge, Mass.

Miscellaneous apparatus:

One roving reel.

Three grain scales.

One run beam.

One hand yarn strength tester.

Two twist counters.

Two Barber knotters.

DESIGN AND POWER WEAVING DEPARTMENT.

Design department:

- One Christian Becker balance.
- Five Volland & Sons balances.
- One twist tester, James H. Heal, Halifax, Eng.
- One microscope, Bausch & Lomb.
- One reel, Brown & Sharpe Manufacturing Company, Providence.
- One pick counter, Charles Lowinson, New York City.
- One Torsion calculation balance, Torsion Balance Company, New York.
- One grain roving scales, Brown & Sharpe, Providence.
- One gram roving scale, Brown & Sharpe, Providence.
- Miscellaneous dies for cutting accurately standard sizes of cloth.

Cotton warp preparation equipment consists of:

- One spooler, a warper and slasher made by Saco-Lowell Shops, Lowell, Mass.
- One beamer, T. C. Entwistle Company, Lowell, Mass.
- One winder, Altemus & Co., Philadelphia, Pa.
- One 400-end improved Draper warper, Draper Company, Hopedale, Mass.
- Drawing-in frames, etc.
- One patented slasher press roll, J. Battles & Co., Lawrence, Mass.
- One patented expansion comb for warper, T. C. Entwistle Company, Lowell, Mass.
- One quiller, Johnson & Bassett, Worcester, Mass.
- Set of 6-inch spools for warper, Macrodi Fiber Company, Woonsocket, R. I.
- One Universal winder for cop and bobbin winding, Universal Winder Company, Boston, Mass. This is driven by a 1 to 8 horse power 220-volt direct-current motor, made by Holtzer-Cabot Electric Company.

Woolen and worsted warp preparation:

- From Davis & Furber Machine Company, North Andover, Mass.:
 - Two 40-end Jack spoolers.
 - Two spool racks for 12 spools each.
 - One pattern dry frame dresser.
 - One pipe and cylinder dresser.
 - One 60-inch reel.
 - One 82-inch reel.
 - One double head beamer.

Braiding machinery:

- Made by the New England Butt Company, Providence, R. I.:
 - One 24-line Hercules braider.
 - One 12-line braider.
 - One tubular braider.
 - One soutache braider.

Silk preparing machinery:

- One winder, Atwood Machine Company, Stonington, Conn.
- One ribbon quiller, Atwood Machine Company, Stonington, Conn.
- One warper and beamer, Swiss style, Atwood Machine Company, Stonington, Conn.
- One double frame, Atwood Machine Company, Stonington, Conn.
- The power for the warp-preparing section is supplied through a 7½-horse power, 220-volt General Electric motor.

Plain looms:

- From Draper Corporation, Hopedale, Mass.:
 - One plain Northrup.
 - One improved Northrup.
 - One 8-harness corduroy.
- From Saco-Lowell Shops, Lowell, Mass.:
 - Nine plain looms.
 - One 5-harness sateen.
 - One 32-inch, 2 by 1 box.
- From Whitin Machine Works, Whitinsville, Mass.:
 - One side cam twill.
 - One plain print cloth loom, equipped with Kip-Armstrong electric warp stop motion.
- One plain print cloth loom, Mason Machine Works, Taunton, Mass.

Plain looms — *Con.*

One plain loom, Kilburn & Lincoln.

One English loom, Hattersley.

One 4-harness, side cam, Lewiston Machine Company.

One Crompton jean loom.

Four of the above looms are equipped with Abbott cleavers, made by the Abbott Wire and Cast Steel Warp Cleaving Company, Lisbon Falls, Me.

Fancy looms:

One Northrup loom with dobby, Draper Corporation, Hopedale, Mass.

One bag loom, Lewiston Machine Company, Lewiston, Me.

One Stafford Ideal loom, 16-harness, automatic shuttle-changing device, Stafford Loom Company, Readville, Mass.

One 20-harness dobby loom, Whitin Machine Company, Whitinsville, Mass.

From Crompton & Knowles Loom Works:

One Knowles gingham, 4 by 1 boxes.

One Crompton gingham, 4 by 1 boxes.

One Crompton towel, 2 by 1 boxes.

One Crompton lappet in the 16-harness dobby.

One Knowles fancy cotton, 20-harness dobby, 4 by 1 boxes, for fancy leno work.

One Crompton fancy cotton, single cylinder, 20-harness dobby.

One Knowles Gem, 20-harness, 4 by 4 boxes.

One Crompton worsted, 24-harness, 4 by 4 boxes.

One Crompton fancy, 6 by 1 double cylinder, 20-harness dobby.

One heavy loom, 20-harness, 4 by 4 boxes.

One Knowles blanket, 25-harness dobby, 4 by 4 boxes.

One Crompton & Knowles blanket, 20-harness dobby, equipped with Draper automatic filling and changing device, and direct driven by General Electric motor.

One Knowles worsted, 32-harness, 4 by 4 boxes.

Three Knowles heavy woolen, 25-harness, 4 by 4 boxes.

Three Crompton & Knowles intermediate, 25-harness, 4 by 4 boxes. One of these looms is operated by a direct-connected $\frac{1}{2}$ -horse power, 220-volt, 3-phase, 60-cycle General Electric motor.

One model dobby attachment.

Jacquard looms:

One Stafford silk loom, 1,200-hook, Halton head.

One 400-hook, single-lift, Schaum & Uhlinger Jacquard, mounted for 4-bank, narrow fabric loom.

One Felix Tonnar German plush loom, with 400-hook Crompton & Knowles Jacquard head.

One Skinner Brussels carpet loom, three-quarters wide, equipped with 1,280-hook Jacquard head. Presented by the Bigelow-Hartford Carpet Company, Clinton, Mass.

From Crompton & Knowles Loom Works:

One Knowles fancy loom, single-lift Jacquard.

One Knowles fancy loom, double-lift Jacquard.

One Knowles fancy loom, Jacquard tied up for leno.

One Knowles ingrain carpet loom, 4 by 4 boxes.

One Knowles loom, 4 by 4 boxes, 54-inch, with 600-hook double-lift double-cylinder McMurdo Jacquard head. Tied up for damask napkin designs.

One Crompton ingrain carpet loom, 4 by 4 boxes.

One Crompton & Knowles 72-inch tapestry loom, with 2,600-hook Halton Jacquard head.

One 840-hook double-lift, single-cylinder Jacquard on Crompton & Knowles 4-bank ribbon loom. This loom is driven by a direct-connected one-half horse power Westinghouse 220-volt, 60-cycle motor.

One 800-hook, double-lift Knowles Gem silk brocade Jacquard machine, 4 by 4 boxes.

Card-cutting machines:

One Jacquard fine index card-cutting machine, John Royle & Sons, Paterson, N. J.

One Jacquard French index card-cutting machine, John Royle & Sons, Paterson, N. J.

One Jacquard French index card-cutting machine, presented by the Bigelow-Hartford Carpet Company, Lowell, Mass.

Hand Loom Weaving.

Twelve hand looms, 3 by 3 boxes, 20-harness dobby.
 Eight hand looms, 4 by 4 boxes, 24-harness dobby.
 Eight hand looms, 3 by 3 boxes, 32-harness dobby.
 Six hand looms, 4 by 4 boxes, 30-harness dobby.
 Two hand looms, 4 by 4 boxes, 32-harness dobby.
 Two hand looms, 4 by 4 boxes, 200-hook Jacquard.
 Two hand looms, 3 by 3 boxes, 200-hook Jacquard.
 Two hand looms, 3 by 3 boxes, 600-hook Jacquard.
 One hand loom, 48-harness.
 Two hand looms with treadles.
 Pattern warping stands.
 Beaming, drawing-in stands, etc.

CHEMISTRY AND DYEING DEPARTMENT.

Chemical laboratories:

The General Chemistry and Qualitative Analysis Laboratory includes:

One hundred and twenty laboratory desks, each containing a full set of apparatus for the first year's work in chemistry; also gas and water fittings, reagents and sinks.

There are also four large double hoods, two steam baths and two Parsons' automatic gas generators.

Quantitative Laboratory:

One No. 1 steam-heated water still made by Barnstead Water Still Company.

One steam drying closet and several drying ovens.

One large steam bath.

One electrolytic table.

Five hoods.

Fifty laboratory desks, each fully provided with apparatus.

Balance Room:

One large Christian Becker analytical balance.

Seven small Christian Becker analytical balances.

One Standinger analytical balance.

One Eimer & Amend analytical balance.

One H. L. Becker's Sons & Co. analytical balance.

Organic Laboratory:

One electric combustion furnace.

Three gas combustion furnaces.

One Lother-Meyers furnace for table.

Two autoclaves.

One ball mill.

One automatic stirring apparatus.

One 3-horse power Holtzer-Cabot Electric Company's motor.

Laboratory tables, lockers, hoods, electric ovens and heating apparatus, etc.

Instructor's Laboratory:

Adjacent to the Organic Laboratory is arranged an Instructor's Laboratory equipped with steam bath, hood, cases and working benches.

Microscopic, Photographic and Colorimetric Laboratory:

Two benches for microscopical work.

One tintometer.

Five Bausch & Lomb compound microscopes.

One Ives colorimeter.

One Natchet et Fils compound microscope.

Microscopic, Photographic and Colorimetric Laboratory — *Con.*

One polariscope made by Franz Schmidt & Haensch, Berlin, Ger.

One spectroscope made by John Browning, London, Eng.

One Bausch & Lomb Model G photomicrographic apparatus equipped with a D. D. S. microscope and all necessary apparatus.

Desks and shelves for the apparatus and reagents necessary for this branch of the work.

Adjoining this laboratory is a dark room for spectrum analysis, photometric and photographic work, etc.

In this dark room has been placed a piece of apparatus for determining the relative fading powers of various light sources. Besides the common gas and electric lamps there is installed a solar determinator, made by the Atlas Electric Company, Chicago, Ill.; also a 400-watt Nela Trutint and color matching unit, made by Nela Specialties Division, Cleveland, Ohio.

Assistant Instructor's Laboratory:

One large case of chemicals.

One double hood.

One copper water bath.

One soapstone sink with a drain board.

Benches, desks and complete fittings for water, gas and suction.

Private Laboratory:

One Thoenner balance.

One large hood.

One steam bath.

One experimental dye apparatus.

One large Bausch & Lomb microscope.

One Bausch & Lomb K. P. binocular microscope.

One case of chemicals and apparatus.

One steam jacketed kettle.

Three laboratory benches, with necessary fittings.

Chemical Lecture Room and Museum:

A lecture table fully equipped with gas, water, sinks, a hood and sufficient apparatus for lecture experiments.

An electric reflectroscope provided with suitable screen, which makes it possible to illustrate a lecture either from slides or by cuts, photographs or objects.

Seats for 80 students, arranged on a raised floor so that every student has a full view of the lecture table.

Various collections of dyestuffs and chemicals for exhibition and for lecture demonstration.

Experimental Dyeing Laboratory:

The Dyeing Laboratory is equipped with individual benches, small dyeing apparatus, reels, balances, apparatus for dye testing, such as frames for exposing dyed material to light, and a complete collection of dyestuff samples and sample cards.

Fifty-six steam coil experimental dyeing baths; also a drying chamber, aging chamber, etc.

Dye Stuff Room:

Adjacent to the Experimental Dyeing Laboratory there has been provided a well-lighted room for the storage of a great variety of dyestuffs. Steel shelving has been arranged so that the samples are easy of access. All samples are catalogued in a card file, thus facilitating their use. In this same room is provided a sink and cement table with balances.

Experimental Printing Laboratory:

One calico printing machine, made by Mather & Platt, Manchester, Eng.

One iron jacketed steaming chamber from A. Edmeston & Son, Patricroft, Eng.

One set of steam jacketed copper kettles.

Fuel and Oil Analysis Laboratory:

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|---|---------------------------------------|
| Mather bomb calorimeter, with complete outfit. | |
| Emerson bomb calorimeter, with complete outfit. | |
| Parr calorimeter. | Sartorius specific gravity balance. |
| Abbé refractometer. | Two Becker analytical balances. |
| Torsion viscosimeter. | Gas muffle furnace. |
| Tagliabue viscosimeter. | Kny-Scherer oil tester. |
| Tagliabue cold test apparatus. | Graefe gas calorimeter. |
| Pensky Martin oil tester. | Orsat gas analysis apparatus. |
| New York State oil tester. | Laboratory tables, lockers and hoods. |

Industrial Chemistry Laboratory:

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|--|-----------------------------|
| One filter press, Type E, T. Shriver & Co. | |
| One single-acting triplex plunger pump, Goulds Manufacturing Company. | |
| One vacuum drying apparatus, Norman Hubbard's Sons. | |
| One surface condenser, Norman Hubbard's Sons. | |
| One Packard vacuum pump, Norman Hubbard's Sons. | |
| One vacuum evaporator, Swenson system, American Foundry and Machine Company. | |
| One centrifugal, C. H. Chavant & Co. | |
| One double jar mill, F. I. Stokes & Co. | |
| Ten copper steam baths, D. H. Wilson & Co. | |
| One 36-inch ventilating fan, Massachusetts Fan Company. | |
| One autoclave. | One Sturtevant ore crusher. |
| Lockers and tables. | One Sturtevant pulverizer. |
- The power for this section is furnished through a 7½-horse power, 220-volt General Electric motor.

Commercial Dyeing Laboratory:

- One kier, Atlantic Works, East Boston, Mass.
 - One small kier, fitted with E. D. Jefferson's circulating device.
 - One electrolyzer for manufacturing bleaching solutions, the National Laundry Machine Company, Dayton, Ohio.
 - One Permutit filter, the Permutit Company, New York City.
 - One mercerizing machine.
 - One raw stock dyeing machine, Klauder-Weldon Dyeing Machine Company, Yardley, Pa.
 - One yarn dyeing machine, Klauder-Weldon Dyeing Machine Company, Yardley, Pa.
 - One jig dyeing machine, the Textile-Finishing Machinery Company, Providence, R. I.
 - One set of drying cans, the Textile-Finishing Machinery Company, Providence, R. I.
 - One chain dyeing machine, T. C. Entwistle Company, Lowell, Mass.
 - One raw stock drying table, Philadelphia Textile Machinery Company, Philadelphia, Pa.
 - One padding mangle, Arlington Machine Works, Arlington, Mass.
 - One hydro-extractor, W. H. Tolhurst & Son, Troy, N. Y.
 - One experimental dyeing machine, the Psarski Dyeing Machine Company, Cleveland, Ohio.
 - One experimental dyeing machine, equipped for raw stock or yarns, Hussong Dyeing Machine Company, Croweville, N. J.
 - One sample piece dyeing machine, Rodney Hunt Company, Orange, Mass., equipped with an automatic temperature and pressure-regulating apparatus, made by C. J. Tagliabue Manufacturing Company, Brooklyn, N. Y.
 - One laboratory dyeing machine, Franklin Process Company, Providence, R. I.
 - Seven dye tubs and two trucks.
- The power for this section is supplied through a 15-horse power, 220-volt Allis-Chalmers motor, and speed can be controlled by a Reeves' variable speed device.

FINISHING DEPARTMENT.

Woolen and Worsted.

- One 2-string washer, Rodney Hunt Company, Orange, Mass.
- One fulling mill, Rodney Hunt Company, Orange, Mass.
- One sample fulling mill, James Hunter & Co., North Adams, Mass.
- One up and down dry gig, Curtis & Marble, Worcester, Mass.
- One rolling and stretching machine, Curtis & Marble, Worcester, Mass.
- One up and down wet gig, Curtis & Marble, Worcester, Mass.
- One steam finishing machine, Curtis & Marble, Worcester, Mass.

One 60-inch, 3-burner singeing machine, adapted for cotton, silk or worsted goods, Curtis & Marble, Worcester, Mass.

One 2-cylinder double-acting brushing machine, Curtis & Marble, Worcester, Mass.

One 60-inch, 4-cylinder sanding and polishing machine, Curtis & Marble, Worcester, Mass.

One kicker mill, James Hunter & Co., North Adams, Mass.

One $\frac{3}{4}$ double shear, Parks & Woolson, Springfield, Vt.

One single shear, Curtis & Marble, donated by Massachusetts Mohair Plush Company, Lowell, Mass.

One dewing machine, G. W. Voelker & Co., Woonsocket, R. I.

One $\frac{3}{4}$ Voelker rotary press, G. W. Voelker & Co., Woonsocket, R. I.

One tentering and drying machine, John Heathcote, Providence, R. I.

One single crabbing machine, H. W. Butterworth & Son, Philadelphia, Pa.

One 72-inch woolen napper, Davis & Furber, North Andover, Mass.

One 32-inch basket hydro-extractor, W. H. Tolhurst, Troy, N. Y.

One A. W. C. measuring and weighing machine, Parks & Woolson, Springfield, Vt.

One Lintz & Eckhardt cloth numbering machine, improved by Durbrow & Hearne Manufacturing Company, New York.

One steam press for underwear, United States Hoffman Company, Syracuse, N. Y.

One sewing machine, Birch Brothers, Somerville, Mass.

Soap tanks, perch, burling and measuring tables.

The power for this section is supplied through a 15-horse power, 220-volt Allis-Chalmers motor.

Cotton Finishing.

One 40-inch inspecting and brushing machine, Curtis & Marble, Worcester, Mass.

One 44-inch No. 25 railway sewing and rolling machine, Curtis & Marble, Worcester, Mass.

One 44-inch cotton shearing machine, Type No. 34, Curtis & Marble, Worcester, Mass.

One 44-inch No. 3 steam calender rolling machine, Curtis & Marble, Worcester, Mass.

One 40-inch cloth folder, Curtis & Marble, Worcester, Mass.

One 40-inch winder and measurer, Curtis & Marble, Worcester, Mass.

One set 44-inch shear blades for grinding purposes, Curtis & Marble, Worcester, Mass.

One 48-inch No. 4 opening, sewing and re-rolling machine, Dinsmore Manufacturing Company, Salem, Mass.

One No. 1 hand power portable railway sewing machine, Dinsmore Manufacturing Company, Salem, Mass.

One 40-inch, 3-roll water mangle, with husk and brass rolls and usual attachments, the Textile-Finishing Machinery Company, Providence, R. I.

One 48-inch Mycock scutcher for the water mangle, Thos. Leyland & Co., Boston, Mass.

One 40-inch Mycock cloth expander for the water mangle, Thos. Leyland & Co., Boston, Mass.

One 40-inch, 2-roll starch mangle, the Textile-Finishing Machinery Company, Providence, R. I.

One 40-inch upright drying machine with 10 copper cylinders, the Textile-Finishing Machinery Company, Providence, R. I. These are equipped with Files dry can system, Files Engineering Company, Inc., Bridgeport, Conn.

One 16 by 24 inch bronze-covered stretcher for the drying cans, C. A. Luther & Co., Providence, R. I.

One 40-inch double bristle stretcher for drying cans, American Finishing Machinery Company, Boston, Mass.

One 40-inch sprinkler, the Textile-Finishing Machinery Company, Providence, R. I.

One 40-inch, 5-roll Universal calender with chasing attachment, the Textile-Finishing Machinery Company, Providence, R. I.

One 40-inch Mycock cloth expander for the calender, Thos. Leyland & Co., Boston, Mass.

One 40-inch Tommy Dodd starch mangle, H. W. Butterworth & Sons Company, Philadelphia, Pa.

One 44-inch, 50-foot vibratory tentering machine, H. W. Butterworth & Sons Company, Philadelphia, Pa. This machine is driven separately by a $7\frac{1}{2}$ -horse power variable speed, 220-volt, direct-current General Electric motor, and is equipped with the Schwartz automatic electric guider, made by L. H. A. Schwartz & Co., Boston, Mass.

One pasting table with plate, the Textile-Finishing Machinery Company, Providence, R. I.

Two copper steam jacketed starch kettles.

The power for this section is supplied through a 25-horse power, 220-volt Westinghouse direct-current motor.

ENGINEERING DEPARTMENT.

Steam Engineering Laboratory.

The Engineering Laboratory contains the following equipment:

- 50-horse power Allis-Chalmers Corliss steam engine (Reliance type) for experimental purposes, arranged to operate condensing or non-condensing, and direct connected to an Alden absorption dynamometer.
- Wheeler surface condenser (200 square feet surface), with 5 by 6 by 6 by 7 inch combined air and circulating pump.
- 25-kilowatt Kerr steam turbine (7 stage), direct connected to 25-kilowatt Richmond Electric Company alternating current generator, and arranged for both condensing and non-condensing conditions. The piping is also arranged that this turbine may be run as a low-pressure turbine, in conjunction with the Allis-Chalmers engine. The generator is especially designed for experimental work with connections and windings for all the commercial phases.
- 5,000-gallon pressure tank for heads up to 300 feet and connections for experimental work.
- Two 2,500-gallon concrete storage tanks.
- Complete set of weighing and suction tanks on Fairbanks Standard scales.
- Deanc triplex power pump, 4 by 6 inches.
- One Hays flue gas collector and instruments for determination of CO_2 , O and CO.
- One throttling calorimeter and one separating calorimeter, made by Schaeffer & Budenberg Manufacturing Company.
- One 2-inch centrifugal pump, made by Lawrence Machine Company and direct connected to a 3-horse power General Electric 220-volt induction motor.
- Miscellaneous equipment of pressure, vacuum and draft gauges, thermometers, etc.
- Clayton air compressor (belted type), 6 by 6 inches.
- Centrifugal pump, 2-inch (belted type), Lawrence Machine Company, Lawrence, Mass.
- Two Sturtevant fan blowers for experimental work.
- $\frac{3}{4}$ -inch Metropolitan injector and $\frac{1}{4}$ -inch ejector.
- One Massachusetts motor-driven fan and heater combination, arranged for testing work on heating, drying, etc.
- One Sturtevant engine-driven, induced-draft fan, connected for experimental work.
- Differential transmission dynamometer.
- Variable speed transmission.
- One dead weight tester for calibrating pressure gauges.
- One vacuum pump and mercury column for calibrating vacuum gauges.
- Two steam engine indicators (inside and outside spring pattern) with reducing wheels and motions. Planimeters (plain and averaging types). Speed counters and tachometers.
- One gas engine indicator. Apparatus for investigating the rate of heat transmission for steam-heating coils and condenser tubes.
- All steam supplied to the laboratory passes through a 4-inch horizontal Cochrane steam separator to insure dry steam for experimental work.
- Buff & Buff engineer's transit.
- Philadelphia level rod.
- Apparatus for testing friction and slip of belts and pulleys.

Electrical Engineering Laboratory.

Standard marine finished slate switchboard, made up of:

- One Westinghouse alternating current generator panel, 25 kilowatts.
- One Westinghouse alternating current generator panel, 15 kilowatts.
- One circuit panel for lights and motors.
- One 15-k. v. a., 220-volt, 3-phase, 60-cycle synchronous motor.
- One 24-horse power, 220-volt, direct-current Allis-Chalmers motor.
- One 10-horse power, 220-volt, direct-current General Electric compound wound motor.
- One 7.5-horse power, 220-volt, 3-phase, 60-cycle General Electric induction motor.
- One 10-horse power, 220-volt, 3-phase, General Electric induction motor.
- One 4-horse power General Electric dynamometer, which may be used either as a rotary transformer or a double current generator. Receives or delivers through transformer 220-volt, 60-cycle, 3-phase on one side, and delivers or receives 220-volt direct current.
- One 5-kilowatt, 220-440-volt transformer.
- Westinghouse portable polyphase wattmeter with current transformers.
- Three General Electric alternating current wattmeters.

Two General Electric alternating current ammeters.
 One General Electric alternating current voltmeter.
 Two 250-volt direct-current Weston portable voltmeters.
 One Weston direct-current portable millivoltmeter; 2 ampere and 20 ampere shunts for use with the above instrument.
 One 150-ampere direct-current Weston portable ammeter.
 Two Weston model 45 direct-current ammeters.
 Two Weston model 260 direct-current ammeters.
 One Weston model 260 direct-current voltmeter.
 One Thompson 50-ampere, 2-wire, 220-volt recording wattmeter, General Electric Company.
 One Weston Laboratory Standard voltmeter with multiplier to 600 volts.
 One small Wheatstone bridge with D'Arsonval wall galvanometer.
 One simple galvanometer.
 One Leeds & Northrup potentiometer No. 7551.
 One wall galvanometer, Leeds & Northrup, No. 2210, D'Arsonval type.
 One Wheatstone bridge, Leeds & Northrup, No. 4725A, with D'Arsonval galvanometer, Leeds & Northrup tripod type.
 One slide wire bridge, Leeds & Northrup.
 One portable galvanometer, No. 2323, Leeds & Northrup.
 One ohmmeter, Leeds & Northrup.
 One electro-dynamometer, Leeds & Northrup.
 One Weston Standard cell.
 Two tachometers.
 One potential phase shifter, made by States Company, Hartford, Conn.
 One standard Leeds & Northrup photometer with Lummer-Brodhun screen compound rotator and rotating sector, screens, etc.
 One Macbeth illuminometer, Leeds & Northrup.
 One Esterline portable curve drawing wattmeter designed for polyphase alternating-current or direct-current power measurements. Mechanism to vary speed of paper.
 Two hand feed arc lamps for stereopticons.
 Resistance boxes of various sizes and other apparatus necessary for commercial testing of lamps, motors, etc.
 2-cell storage battery for constant voltage current supply.
 An exhibition board containing samples of the Exide storage battery plates donated by the Electric Storage Battery Company of Philadelphia.
 Miscellaneous apparatus for experiments in mechanics, heat, light, sound and electricity.

Machine Shop.

The equipment of the machine shop is as follows:

Four standard engine lathes, 13-inch swing, 6-foot bed, from Flather & Co., Nashua, N. H.
 Three standard engine lathes, 14-inch swing, 6-foot bed, from Flather & Co., Nashua, N. H.
 One standard engine lathe, 15-inch swing, 6-foot bed, from F. E. Reed Company, Worcester, Mass.
 One engine lathe, 18-inch swing, 10-foot bed, from Flather & Co., Nashua, N. H.
 One engine lathe, 18-inch swing, 6-foot bed, from Champion Tool Works, Cincinnati, Ohio.
 One standard engine lathe, 15-inch swing, 6-foot bed, from S. H. Putnam Sons, Fitchburg, Mass.
 Five speed lathes, 17-inch swing, 5-foot bed, from J. G. Blount, Everett, Mass.
 One No. 1 Universal milling machine, with all three feeds automatic, from Kempsmith Manufacturing Company, Milwaukee, Wis.
 One 24 by 24 inch, 6-foot planer, from the Mark Flather Planer Company, Nashua, N. H.
 One 23-inch upright drill, with back gears and power feed, from J. E. Snyder & Son, Worcester, Mass.
 One 14-inch single sensitive drill, from the Stanley Manufacturing Company, Lawrence, Mass.
 One No. 1 Universal grinder, from Landis Tool Company, Waynesboro, Pa.
 One 20-inch wet tool grinder, from J. G. Blount, Everett, Mass.
 One 12-inch, 2-wheel dry grinder, from J. G. Blount, Everett, Mass.
 One American twist drill grinder, from the Heald Machine Company, Worcester, Mass.
 One Type 1B portable electric grinder, from the Cincinnati Electric Tool Company, Cincinnati, Ohio.
 One 30-inch grindstone and frame, from the Athol Machine Company, Athol, Mass.
 One single spindle centering machine, from D. E. Whiton Machine Company, New London, Conn.

- One 15-inch shaper, from Potter & Johnson, Pawtucket, R. I.
- One power hack saw, from the Fairbanks Company, Boston, Mass.
- One cold saw, from John T. Burr & Son, Brooklyn, N. Y.
- Two blacksmith forges, anvils and tools.
- One gas oven for hardening and tempering tools.
- One Eureka metal power saw, Manning, Maxwell & Moore.
- One Type CC electric drill, Cincinnati Electric Tool Company.
- One Universal milling attachment for Kempsmith milling machine, Taylor Machinery Company.
- One Hisey Type B $\frac{1}{2}$ -horse power tool post grinder, Taylor Machinery Company.
- One No. 2 Cory bench straightener, Manning, Maxwell & Moore.
- One No. 3 Universal cutter and reamer grinding machine, Brown & Sharpe.
- (These machine tools are fully equipped with chucks, centers, tools, etc., for a great variety of work. Benches with vises are also provided for such work as chipping, filing, etc.)
- A well-equipped tool room containing a selected stock of the best makes of small tools, such as drills, taps and dies, milling cutters, reamers, gauges, micrometers, etc.
- The following woodworking tools are also provided in addition to benches for pattern making:
 - One pattern maker's lathe, 16-inch swing, 8-foot bed, from Fay & Scott, Dexter, Me.
 - One 32-inch band saw, from the Crescent Machine Company, Leetonia, Ohio.
 - One iron single saw bench, from the Crescent Machine Company, Leetonia, Ohio.
 - One double saw bench.
 - One 12-inch buzz planer, from W. W. Carey, Lowell, Mass.
- The power for the machine shop is supplied through a 10-horse power, 220-volt direct-current Allis-Chalmers motor.

Power, Light, Heat and Ventilating Plant.

- In the new power house, completed in 1913, there is located the main power-generating apparatus for supplying light, heat and power to all departments of the school. The equipment here consists of:
 - Two 250-horse power Heine water tube boilers, equipped with Perfection grates.
 - One 300-horse power Aultman & Taylor horizontal water tube boiler, equipped with United States rocking grates.
 - One Knowles boiler feed pump, 6 by 4 by 6.
 - One Deane boiler feed pump 6 by 4 by 6.
 - All feed water is heated and measured by a 30,000-pound Cochrane metering open-feed water heater, which is provided with a Lea recorder and a Cochrane oil extractor. Harrison Safety Boiler Works, Philadelphia, Pa.
 - One 3-inch Venturi meter in feed line with indicating manometer, Builders Iron Foundry, Providence, R. I.
- In the Engine Room are located:
 - One Payne 14 by 14 automatic high speed engine, 125-horse power direct connected to 75-kilowatt, 220-volt, direct-current Bullock generator.
 - One 9 $\frac{1}{2}$ by 11 $\frac{1}{4}$ Nash gas engine of 50-horse power, 4-cycle type, with speed-regulating clutch and a "hit and miss" governor. Direct connected to a 30-kilowatt, 220-volt, direct-current Bullock generator.
 - One steam-driven Ingersoll-Rand 8 by 8 air compressor, for use with Tarbo heads, installed in the French Spinning Department by the G. M. Parks Company, Fitchburg, Mass.
 - One 5 $\frac{1}{2}$ by 6 motor-driven air compressor, with 20 cubic foot storage tank for use in starting Nash gas engine.
 - One Cross oil filter.
- The station switchboard is of marine-finished slate, 90 inches in height, and consists of two generator panels and one circuit panel. From this lead circuits supplying approximately 1,200 16-candlepower equivalent lamps, and over 270 horse power in motors, located in various departments of the school.
- The power house is connected with the main school buildings by a tunnel through which all wires, steam and water pipes are carried. The steam pipes supply heat to the buildings by means of direct radiation, and by means of the Sturtevant double duct heating and ventilating system located in the basement of Southwick Hall, and by the Sturtevant fan and heater located in the basement of Kitson Hall. Direct-driven exhaust fans are placed on the roof of Southwick Hall and in the basement laboratories.
- The humidity of the Spinning and Weaving Department is provided by the American Moistening Company's system, including 12 heads, a Knowles triplex 4 by 4 power pump and tank.

ATHLETICS.

Through the generosity of Mr. Frederick Fanning Ayer the school has been provided with a campus and athletic field of about 3 acres. This has been carefully graded and laid out for baseball, football and track athletics.

To enclose this field the Alumni Class Fence has been partly built. It is made of forged iron sections supported between brick columns. Each section is contributed by a class, so that in the course of a few years this fence will entirely enclose the field.

On the upper floor of the Falmouth Street Building there has been provided a recreation room for the use of the students at such times as their attendance is not required in classes. This room is also used by those who take part in athletics, and connected to it is a smaller room provided with shower baths.

The upper hall of Southwick Hall has been equipped with gymnastic apparatus. Chest weights, wooden dumb-bells, Indian clubs, a set of traveling rings, a vaulting horse, parallel bars, a punching bag and several sets of foils and single sticks have been provided.

In order to be sure that no student having any dangerous physical weakness takes part in any athletic contest, all candidates for the various athletic teams are obliged to pass a satisfactory physical examination.

ALUMNI ASSOCIATION.

The Alumni Association of the School holds its annual meeting and banquet in February of each year in Boston, Mass.

The membership of the association is restricted to graduates of the day school. Honorary membership is open to the Board of Trustees, the faculty and such others as may be elected by the association.

The officers for the year 1920 are:—

President, ROBERT R. SLEEPER, '00.

Vice-President, WILLIAM E. WEINZ, '08.

Secretary-Treasurer, ARTHUR A. STEWART, '00.

Board of Directors: the President, Vice-President, Secretary-Treasurer, William Walker, Jr., '06, for one year, George A. Boyd, '05, for two years. Communications should be addressed to Arthur A. Stewart, Lowell Textile School.

ENTERTAINMENT COMMITTEE.

Arthur J. Hennigan, '06, *Chairman*.

Royal P. White, '04.

Everett B. Rich, '11.

James F. Dewey, '04.

Harold W. Cheney, '06.

OFFICERS AND INSTRUCTORS.

President.

CHARLES H. EAMES, S.B., Massachusetts Institute of Technology, 1897; active member of the American Institute of Electrical Engineers; member of the American Association for the Advancement of Science. Experience: Secretary of the Lowell Textile School and instructor in electrical engineering and mathematics; superintendent, Light, Heat and Power Corporation, Lowell; and engineer with Stone & Webster, electrical engineers, Boston, Mass.

Instructors.

TEXTILE ENGINEERING.

HERBERT J. BALL, S.B., B.C.S., chief instructor. Massachusetts Institute of Technology, 1906; Northeastern College, 1916. Experience: Accountant with Robert Douglas & Co., Boston, Mass.; instructor, Northeastern College; draftsman, Watertown Arsenal; Lincoln-Williams Twist Drill Company.

ULYSSES J. LUPIN, S.B., associate head instructor in mathematics, physics and electrical engineering. Lawrence Scientific School, 1906. Experience: Draftsman, General Electric Company, Lynn, Mass.; with Winston Company, Metropolitan Water Board.

EDWARD K. HULL, instructor in mechanical drawing. Experience: Assistant instructor in mechanical drawing at Tufts College; instructor in mechanical drawing at University of Maine; draftsman for Boston & Maine Railroad, Boston, Mass.

CHARLES H. JACK, instructor in machine-shop practice. Lowell Textile School. Experience: Amoskeag Manufacturing Company, Manchester, N. H.

PHILIP O. YEATON, S.B., B.S., instructor in mechanical engineering. Massachusetts Institute of Technology, 1917; Dartmouth College, 1913. Experience: With Proctor & Gamble Company, Kansas City, Kans.; instructor, Massachusetts Institute of Technology.

HARRY C. BROWN, S.B., instructor in mechanical engineering. Brown University, 1913. Experience: General Electric Company; instructor, University of Maine and Wentworth Institute.

FREDERICK A. MAGOUN, B.S., S.B., instructor in mechanical drawing and mathematics. Massachusetts Institute of Technology, 1918; Harvard College, 1918. Experience: erection engineer, Westinghouse Electric and Manufacturing Company.

HAMAZASB DER MANUELIAN, S.B., evening instructor in mathematics. Massachusetts Institute of Technology, 1918. Experience: United States Cartridge Company, Lowell, Mass.

FORREST A. MILLS, evening instructor in machine-shop practice. Experience: Machinist, Silesia Worsted Mills, North Chelmsford, Mass.

CHEMISTRY AND DYEING.

LOUIS A. OLNEY, S.B., M.S., chief instructor. Lehigh University, 1896; member American Institute of Chemical Engineers. Experience: Instructor, Brown University; dyeing and finishing department, Stirling Mills, Lowell, Mass.

ARTHUR K. JOHNSON, S.B., instructor in chemistry. Lowell Textile School, 1913; Massachusetts Institute of Technology, 1917.

ELMER E. FICKETT, B.S., instructor in chemistry. Tufts College, 1908. Experience: Assistant chemist, Walworth Manufacturing Company, Boston, Mass.; superintendent assayer, United States Nickel Company; instructor in School of Mines, University of North Dakota; instructor in Washington University, St. Louis, Mo.

FREDERICK S. BEATTIE, Ph.B., instructor in chemistry. Brown University, 1906. Experience: assistant in chemistry, Brown University; instructor in chemistry, Lehigh University.

- ARNE K. GYZANDER, instructor in dyeing. Lowell Textile School, 1909. Experience: Color chemist, Dana Warp Mills, Westbrook, Me.; National Aniline and Chemical Company, Boston, Mass.
- HOWARD D. SMITH, Ph.D., evening instructor in chemistry. Tufts College, 1906; Brown University, 1904; Rhode Island College, 1901. Experience: Assistant instructor, Brown University and Tufts College; instructor, Beloit College, Wisconsin.

TEXTILE DESIGN AND WEAVING.

- HERMANN H. BACHMANN, chief instructor. Gera Textile School, Germany. Experience: Gustav Weise Public Designing House for the City of Gera; Parkhill Manufacturing Company, Fitchburg, Mass.; Lorraine Manufacturing Company and Smith Webbing Company, Pawtucket, R. I.
- STEWART MACKAY, instructor in textile design and cloth analysis. Lowell Textile School, 1907. Experience: Bay State Mills, Lowell, Mass.; George C. Moore Wool Scouring Mills, North Chelmsford, Mass.
- MARTIN HOELLRICH, instructor in power weaving. Lowell Textile School, evening class, 1910; textile school, Reichenbach, Ger. Experience: C. F. Weiss, Helmbrechts, Ger.; J. Back, Turkish shawls, Reichenbach, Ger.; Parkhill Manufacturing Company, Fitchburg, Mass.; American Woolen Company, Lawrence and Winooski; Pacific Mills, Lawrence, Mass.
- ALBERT G. SUGDEN, instructor in weaving. Lowell Textile School, evening class, 1912. Experience: Designer, United States Bunting Company, Lowell, Mass.
- E. ELIZABETH WHITNEY, evening instructor in freehand drawing. Normal Art School, Boston, 1882; pupil of Dr. Denman W. Ross, lecturer in design, Harvard University. Experience: Teaching eighteen years.
- EDITH C. MERCHANT, evening instructor in freehand drawing. Normal Art School, Boston, 1908. Experience: Teaching, evening drawing school, Lowell, Mass.; supervisor of drawing, Pepperell, Mass.

COTTON YARNS.

- STEPHEN E. SMITH, chief instructor. Lowell Textile School, 1900. Experience: Draftsman, Saco-Lowell Shops, Lowell, Mass.; Atlantic Cotton Mills, Lawrence, Mass.; Shaw Stocking Company, Lowell, Mass.
- GILBERT R. MERRILL, B.T.E., instructor in cotton yarns and knitting. Lowell Textile School, 1919.
- ARTHUR J. WOODBURY, instructor in cotton yarns. Experience: Nashua Manufacturing Company, Nashua, N. H.; Lawrence Manufacturing Company, Lowell, Mass.

WOOLEN AND WORSTED YARNS.

- EDGAR H. BARKER, chief instructor. Massachusetts Institute of Technology, 1896. Experience: Pacific Mills, Lawrence, Mass.; E. Frank Lewis, Lawrence, Mass.; wool scouring.
- JOHN C. LOWE, instructor in woolen and worsted yarns. Lowell Textile School, evening class, 1911. Experience: Wood Worsted Mills, Lawrence, Mass.
- HARTMAN F. SCHMIDT, instructor in woolen and worsted yarns. Lowell Textile School, evening class, 1914. Experience: Hockanum Mills Company, Rockville, Conn.; Wood Worsted Mills, Lawrence, Mass.; Albany Felt Company, Albany, N. Y.

FINISHING.

- ARTHUR A. STEWART, chief instructor. Lachine Academy, Canada; Lowell Textile School, 1900. Experience: Dominion Woolen Manufacturing Company, Montreal, Can.; American Woolen Company Mills; Nonantum Worsted Mills, Newton, Mass.; instructor in woolen and worsted yarns, Lowell Textile School.
- C. LEONARD GLEN, instructor in finishing. Experience: Dunnell Manufacturing Company, Pawtucket, R. I.; United States Finishing Company, Pawtucket, R. I.; O'Bannon Corporation, West Barrington, R. I.

LANGUAGES AND HISTORY.

- LESTER H. CUSHING, A.B., chief instructor. Harvard College, 1911.
- JAMES G. DOW, A.B., instructor in languages. Boston University, 1919.

GRADUATES, JUNE 10, 1919.

Graduates, with Titles of Theses.

DEGREES CONFERRED.

ARTHUR JULIUS ANDERSON,	Concord, N. H.
Bachelor of Textile Chemistry. "Analytical Reaction of Cotton, Wool and Silk Fibers in Mixtures."	
CARROLL LEWIS BRAINERD,	Bradford, Mass.
Bachelor of Textile Chemistry. "Action of Alkalies and Soap on Wool."	
CHARLES ARTHUR EVERETT,	Methuen, Mass.
Bachelor of Textile Chemistry. "Preparation of Violamine R or Fast Acid Violet A ₂ R."	
FRANCIS EARLE GOODING,	Lawrence, Mass.
Bachelor of Textile Chemistry. "The Possibilities of Etherifying or Esterifying Fluorescein, and the Formation of a Dyestuff by Sulphonation of the Resulting Compounds of the Etherification or Esterification."	
NORMAN CULVER GOULD,	Huntington, Mass.
Bachelor of Textile Engineering. "Standardization of Builder Motions for Cotton Twisters."	
ARTHUR NORMAN HART,	Lowell, Mass.
Bachelor of Textile Chemistry. "Preparation of Primuline and a Study of the Production of Various Insoluble Azo Colors directly upon Cotton Fiber."	
HECTOR GRAHAM MACDONALD,	Lowell, Mass.
Bachelor of Textile Chemistry. "Study of the Action of Various Acids in Exhausting Acid Dyes from the Dye Bath."	
GILBERT ROSCOE MERRILL,	Lowell, Mass.
Bachelor of Textile Engineering. "The Effect of Reflectors on Light Distribution as applied to Textile Manufacture" (thesis with Herbert Ellsworth Sunbury).	
FRANK MORRISON SANBORN,	West Kennebunk, Me.
Bachelor of Textile Engineering. "Study of Lighting Conditions in the Weave Room of a Cotton Mill" (thesis with John Francis Mul-laney).	
RAYMOND RUSSELL STEVENS,	Dracut, Mass.
Bachelor of Textile Chemistry. "A Study of Wool Oils, with Special Reference to Method of Examination for their Composition and Efficiency."	
TSUN KWEI WOO,	Shanghai, China.
Bachelor of Textile Engineering. "Design of a Silk Mill."	

DIPLOMAS AWARDED.

GEORGE JOHN ALMQUIST,	Passaic, N. J.
Cotton Manufacturing. "A Study of the Effect of Twist in the Manu-facture of Cotton Cords."	
LEON ROBERT MIRSKY,	Nashua, N. H.
Wool Manufacturing. "The Manufacture of a Worsted Suiting."	

Awards for Proficiency in First and Second Year Chemistry.

First. — Ten dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship in first-year chemistry. Awarded to Harold D. Forsyth.

Second. — Five dollars to the student taking the regular Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship in first-year chemistry. Awarded to Dean W. Symmes.

Third. — Ten dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the highest scholarship during the second year. Awarded to Arthur R. Thompson, Jr.

Fourth. — Five dollars to the regular student of the Chemistry and Dyeing Course who shall be considered as having attained the second highest scholarship during the second year. Awarded to Andrew S. Orr.

The above sums to be invested in books.

Medal of the National Association of Cotton Manufacturers awarded to Norman C. Gould.

REGISTER OF DAY STUDENTS.

SENIORS, CLASS OF 1920.

Brainerd, Carl Emil, IV,	146 Main Street, Bradford, Mass.
Brandt, Carl Dewey, VI,	4 West Main Street, Chicopee Falls, Mass.
Burbeck, Dorothy Maria, IV,	67 Loring Street, Lowell, Mass.
Fleischmann, Meyer, IV,	144 Pearl Street, Manchester, N. H.
Forsaith, Charles Henry, VI,	56 Locke Street, Nashua, N. H.
Goldman, Moses Hyman, IV,	259 Normandy Street, Dorchester, Mass.
Johnson, George Henry, IV,	168 Webster Street, Haverhill, Mass.
Morris, Merrill George, IV,	644 Varnum Avenue, Lowell, Mass.
Mullaney, John Francis, VI,	64 Oak Street, Lowell, Mass.
Parker, Hubert Frederic, VI,	21 Florence Avenue, Norwood, Mass.
Powers, Walter Wellington, IV,	15 Wallingford Road, Brighton, Mass.
Quinlan, William Harold, VI,	22 Otis Street, Winter Hill, Mass.
Russell, John William, IV,	57 Bradford Street, Lawrence, Mass.
Scott, Gordon Maxwell, IV,	Weston Avenue, Madison, Me.
Suhlke, Waldo Eric, IV,	63 Walnut Street, Leominster, Mass.
Wells, Ai Edwin, VI,	R. F. D. No. 2, Lowell, Mass.
Wotkowicz, Michael Joseph, VI,	9 Hoosac Street, Adams, Mass.
Zisman, Louis Samuel, IV,	59 Ruggles Street, Roxbury, Mass.

JUNIORS, CLASS OF 1921.

Band, Roy Forrest, VI,	69 Lowden Avenue, West Somerville, Mass.
Boylston, Theodore Willmott, IV,	40 Maple Street, Milton, Mass.
Brown, Russell Lee, VI,	94 Groveland Street, Haverhill, Mass.
Chang, Wen Chuan, VI,	Nantung, Kiangsu, China.
Chen, Shih Ching, IV,	Shanghai, China.
Chou, Yen Ting, VI,	Shanghai, China.
Clayton, Harold Edmund, VI,	11 Thomas Street, Williamstown, Mass.
Cochran, Thomas Charles, IV,	15 West Central Street, Natick, Mass.
Dimock, Dwight Leverett, IV,	Billerica, Mass.
Ellis, Charles Albert, VI,	Chelmsford, Mass.
Goosetrey, Arthur, IV,	Crompton, R. I.
Goosetrey, John Thomas, IV,	Crompton, R. I.
Hadley, Richard Francis, IV,	Billerica, Mass.
Hodge, Harold Bradley, VI,	North Chelmsford, Mass.
Holden, John Sanford, II,	752 North Main Street, Attleboro, Mass.
Kaatze, Julius, VI,	64 Water Street, Lawrence, Mass.
Karanfilian, John Hagop, VI,	505 Fletcher Street, Lowell, Mass.
Laurin, Eric Thurston, IV,	40 Lundberg Street, Lowell, Mass.
Lemire, Joseph Emile, VI,	776 Merrimack Street, Lowell, Mass.
Lewstein, Boris, IV,	68 Crawford Street, Lowell, Mass.
Longbottom, Parker Wyman, IV,	5 Bodwell Street, Sanford, Me.
Mathews, Carl Everette, I,	200 East Center Street, South Manchester, Conn.
Mathieu, Alfred Jules, II,	177 Hamlet Avenue, Woonsocket, R. I.
Moore, William Joseph, IV,	164 Andover Street, Lawrence, Mass.
Morrill, Arthur Lee, VI,	53 Main Street, Saco, Me.
Orr, Andrew Stewart, IV,	10143 115th Street, Richmond Hill, N. Y.
Phaneuf, Maurice Philippe, III,	39 Kinsley Street, Nashua, N. H.
Precourt, Joseph Octave, VI,	147 Main Street, Woburn, Mass.
Radford, Garland, II,	1517 Fannin Street, Houston, Tex.
Rice, Josiah Alfred, Jr., III,	10 Edwards Street, Southbridge, Mass.

Robinson, Russell, VI,	11 Hawthorne Street, Bradford, Mass.
Royal, Louis Merry, VI,	91 Holland Street, Somerville, Mass.
Schaetzel, André Paul, IV,	351 West 57th Street, New York City.
Smith, Sylvanus Paul, VI,	115 Prospect Street, Gloucester, Mass.
Sweet, Arthur Dutcher, VI,	76 Hanks Street, Lowell, Mass.
Thompson, Arthur Robert, Jr., IV,	21 Loring Street, Lowell, Mass.
Toepler, Carl, IV,	72 Woodland Street, Lawrence, Mass.
Washburn, John Milton, Jr., IV,	266 Pine Street, Lowell, Mass.

SOPHOMORES, CLASS OF 1922.

Amesbury, Frederick Alexander, II,	23 Pitman Avenue, Wakefield, Mass.
Bidwell, Leonard Fox, IV,	Glastonbury, Conn.
Bird, Francis John, VI,	30 West Street, Attleboro, Mass.
Brackett, Martin Richard, VI,	30 Dover Street, Somerville, Mass.
Brown, Gerald Marston, VI,	130 Mill Street, Agawam, Mass.
Brown, Will George, Jr., IV,	115 Tenth Street, Lowell, Mass.
Caffray, Raymond Ellery, I,	258 Main Street, Nashua, N. H.
Campbell, Alexander, VI,	601 East 8th Street, South Boston, Mass.
Caya, Ferdinand Joseph, IV,	116 Greene Street, Woonsocket, R. I.
Christofferson, Carl Alfred, IV,	Concord Junction, Mass.
Clasby, Arthur Edward, VI,	34 Bentley Street, Brighton, Mass.
Clifford, Albert Chester, VI,	39 Ainsworth Street, Roslindale, Mass.
Cluin, John Joseph, Jr., VI,	130 Fort Hill Avenue, Lowell, Mass.
Currier, Perley Phillips, VI,	504 Groveland Street, Haverhill, Mass.
Danahy, Joseph Philip, IV,	1077 Washington Street, Canton, Mass.
Derby, Roland Everett, IV,	148 First Street, Lowell, Mass.
Dexter, George Owen, Jr., I,	54 High Street, Newburyport, Mass.
Donahue, Frank Cournyn, VI,	29 Vernon Street, Newton, Mass.
Douglas, Walter Shelton, II,	12 Bertram Street, Lowell, Mass.
Drapeau, Herve Leo, VI,	17 Mount Washington Street, Lowell, Mass.
Forsyth, Harold Downes, IV,	8 Grant Road, Swampscott, Mass.
Gallup, Burton Augustus, VI,	247 Oak Street, Holyoke, Mass.
Gilet, Albert James, VI,	809 Chelmsford Street, Lowell, Mass.
Gillie, Stanley James, VI,	5 Clarendon Street, Gloucester, Mass.
Goulet, Albert Alexander, II,	241 Providence Street, Woonsocket, R. I.
Greenberg, Archie, II,	47 Granite Street, Worcester, Mass.
Hadley, Wilfred Nourse, II,	Billerica, Mass.
Hamlin, Roger Chesley, VI,	148 Stratford Street, West Roxbury, Mass.
Hillman, Ralph Greeley, VI,	Pelham, N. H.
Huse, Charles Hadley, III,	19 Campos Avenue, Lowell, Mass.
Jen, Shang-Wu, VI,	Siang-in Hunan, China.
Jessop, Charles Clifford, VI,	49 Fay Street, Lowell, Mass.
Jones, Nathaniel Erskine, I,	76 High Street, Newburyport, Mass.
Larratt, John Francis, II,	Boston Road, Billerica, Mass.
Leonard, Bryan, II,	1146 Commercial Street, East Weymouth, Mass.
McCauley, Frank Stanley, I,	186 Washington Street, Cumberland, Md.
McGowan, Henry Earl, VI,	36 Varney Street, Lowell, Mass.
McNeil, Ernest Francis, IV,	52 Freeman Street, Stoughton, Mass.
Mahoney, George Stephen, VI,	10 Corner Street, Lowell, Mass.
Mandell, Sampson Dewey, IV,	150 Meade Avenue, Passaic, N. J.
Marble, Ralph Lincoln, VI,	23 Beaver Street, Worcester, Mass.
Marshall, George William, VI,	8 Hillside Avenue, Warren, Mass.
Medina, Pedro Roberto, IV,	Calle del Palo, Medellin, Colombia, S. A.
Miller, Elmer William, III,	19 Kingsville Avenue, Ashtabula, Ohio.
Moors, Edward Dana, VI,	104 Moore Street, Lowell, Mass.
Mott, John Winthrop, I,	St. John's Rectory, North Adams, Mass.
Nary, James Anthony, II,	11 Conway Street, Greenfield, Mass.
Nelson, Russell Sprague, VI,	483 Massasoit Road, Worcester, Mass.
Neugroschl, Sigmund Israel, VI,	14 Walcott Street, Dorchester, Mass.
Nichols, Fredric William, VI,	522 South Main Street, Woonsocket, R. I.
Parsons, Brackett, VI,	3 Robertson Street, East Milton, Mass.
Peckham, Stockman Cole, II,	20 Everett Street, Newport, R. I.

Pierce, Raymond Henry, VI,	17 Atherton Street, Somerville, Mass.
Potter, Charles Diman, IV,	195 Bailey Street, Lawrence, Mass.
Rich, Milton Scott, VI,	12 Circuit Street, West Medford, Mass.
Richardson, Philip Alfred, IV,	161 School Street, Lowell, Mass.
Ross, Edward Stuart, II,	13 Lowell Terrace, Lawrence, Mass.
Russell, Robert Price, IV,	Woodland Road, Holden, Mass.
Sargent, Walter Ambrose, VI,	19 Chester Square, Gloucester, Mass.
Schwarz, Herman Louis, IV,	26 North Terrace Avenue, Mount Vernon, N. Y.
Scott, Walter Irving, II,	820 Main Street, Greenwood, Mass.
Smith, Herbert Jeffers, VI,	Ames Street, Phenix, R. I.
Southwick, Charles Hudson, IV,	335 South Main Street, Woonsocket, R. I.
Sullivan, Daniel Francis, II,	404 Fletcher Street, Lowell, Mass.
Sullivan, Lambert William, IV,	18 Townsend Street, Pepperell, Mass.
Symmes, Dean Whiting, IV,	10 Madison Avenue, Winchester, Mass.
True, William Clifford, VI,	1550 Forest Avenue, Portland, Me.
Wang, Yung-chi, II,	Hangchou, China.
Webster, Joseph Albert, VI,	268 Main Street, Bradford, Mass.
Whittier, Sidney Boyden, VI,	118 Upland Road, Waban, Mass.
Woodhead, Joseph Arthur, VI,	Chelmsford, Mass.
Worthen, Clifford Tasker, IV,	267 Groveland Street, Haverhill, Mass.

FRESHMEN, CLASS OF 1923.

Adams, Donald Francis, VI,	Littleton Street, Chelmsford, Mass.
Adams, Winsor Brundage, VI,	13 Windsor Road, West Somerville, Mass.
Alexander, William Hay, I,	203 Bailey Street, Lawrence, Mass.
Annapolsky, David, VI,	433 Winthrop Street, Winthrop, Mass.
Atwood, Henry Jones, II,	167 Main Street, Waltham, Mass.
Bachelder, Charles Edward, IV,	176 Cross Street, Lowell, Mass.
Barrett, Andrew Edward, IV,	94 School Street, Lowell, Mass.
Beaven, Raymond Gladstone, II,	44 Green Street, Charlestown, Mass.
Bernstein, Arthur Howard, II,	1239 Madison Avenue, New York City.
Bird, Clarence Henry, II,	3 Woodbine Street, Worcester, Mass.
Blake, Howard Curran, IV,	17 Kendrick Street, Lawrence, Mass.
Blanchard, John Lawrence, II,	64 Mears Avenue, Quincy, Mass.
Boyd, Byron Griffin, VI,	147 Powder House Boulevard, West Somerville, Mass.
Campbell, Frank Douglas, III,	38 Sixth Street, Lowell, Mass.
Cannell, Philip Stuart, VI,	6 Foster Street, Everett, Mass.
Carpenter, Ray Alanson, II,	Academy Street, South Berwick, Me.
Carragher, Harry Carlton, II,	365 Beacon Street, Lowell, Mass.
Chandler, Robert Taft, II,	23 Charlotte Street, Worcester, Mass.
Chapman, Leland Hildreth, VI,	94 Highland Avenue, Winchester, Mass.
Clark, Earl Spickett, IV,	68 Liberty Avenue, West Somerville, Mass.
Clark, Elam Tracy, I,	Williston, Vt.
Cohen, Arthur Edward, IV,	47 Revere Street, Boston, Mass.
Cohen, Nathan, VI,	42 Hutchings Street, Roxbury, Mass.
Collonan, Herbert Joseph, II,	High Street, Moosup, Conn.
Dalton, Charles Frederick, IV,	64 Chestnut Street, Andover, Mass.
Davieau, Leon Arthur, VI,	44 Gay Street, Marlborough, Mass.
Delmege, James Wellington, II,	Mount Pleasant Street, North Billerica, Mass.
Desmarais, Albert Ernest, VI,	Main Street, North Grafton, Mass.
Dewar, Allan Sargent, VI,	364 Beacon Street, Lowell, Mass.
Dole, Sumner Guy, IV,	Billerica, Mass.
Donovan, William Joseph, IV,	49 Belmont Street, Somerville, Mass.
Doran, William Kirkland, II,	129 Church Street, Laconia, N. H.
Douglas, Edmund Wade, II,	106 Sanders Avenue, Lowell, Mass.
Enloe, Winfred Paige, I,	Roanoke, Ala.
Farwell, Claude Chapman, VI,	Groton, Mass.
Farwell, Ray Baldwin, VI,	Groton, Mass.
Feindel, George Paul, IV,	Andover Street, North Wilmington, Mass.
Fleet, Stanley Wallace, IV,	13 Park Street, Ayer, Mass.
Fontaine, Oliver Walter, II,	Federal Building, Woonsocket, R. I.
Gillick, Patrick Francis, II,	998 Lakeview Avenue, Lowell, Mass.

Golden, Raymond Edward, I,	South Berwick, Me.
Goller, Harold Poehlmann, VI,	22 Wallace Street, Freeport, N. Y.
Haddad, Nassib, VI,	157 High Street, Clinton, Mass.
Hall, Seth Wilson, I,	121 Eleventh Street, Lowell, Mass.
Harris, Samuel Newell, IV,	66 Princeton Street, Lowell, Mass.
Headstrom, Birger Richard, VI,	222 Willow Avenue, Somerville, Mass.
Holway, Oscar, II,	65 Western Avenue, Augusta, Me.
Horton, Robert Wyman, II,	34 North Prospect Street, Burlington, Vt.
Houghton, Robert Kingsbury, IV,	14 Lincoln Street, Stoneham, Mass.
Hubbard, Harold Harper, I,	"The Lowder," Bangor, Me.
Hurwitz, Jacob, IV,	8 Parkman Street, Boston, Mass.
Jaeger, Robert William, Jr., IV,	345 Savin Hill Avenue, Dorchester, Mass.
Johnson, Philip Stanley, IV,	175 Euclid Avenue, Lynn, Mass.
Keefe, James Thomas, IV,	41 School Street, Lowell, Mass.
Kendall, Charles Henry, VI,	104 Josephine Avenue, Somerville, Mass.
Knox, Joseph Carleton, VI,	109 Rogers Avenue, Somerville, Mass.
Krantz, Everett William, VI,	311 Fourteenth Street, Honesdale, Pa.
Laurin, Sven Albert, IV,	40 Lundberg Street, Lowell, Mass.
Lavallee, Raymond Hermidas, II,	89 Ralph Street, Providence, R. I.
Lawler, William Spencer, VI,	73 Nesmith Street, Lowell, Mass.
Laycock, Edward Arthur, VI,	Salem, N. H.
Lewis, Howard Gardner, IV,	12 Royal Street, Lawrence, Mass.
Lombard, Carleton Joshua, VI,	46 Pleasant Street, Saco, Me.
Loney, Robert William, VI,	59 Chestnut Street, Ware, Mass.
McCann, John Joseph, Jr., VI,	90 Beech Street, Lowell, Mass.
Macher, Henry, IV,	328 Lexington Avenue, Clifton, N. J.
Marshall, Chester Stanley, II,	23 Francis Avenue, Greenwood, Mass.
Medina, Bernardo, VI,	Calle del Palo, Medellin, Colombia, S. A.
Moller, Ernest Arthur, II,	45 Garden Road, Lowell, Mass.
Neff, Howard Sutcliffe, II,	56 Chestnut Street, Ware, Mass.
Nichols, Fernald Hobart, II,	74 Chauncey Avenue, Lowell, Mass.
Nourse, Willbert Allen, IV,	4 Wyman Street, Worcester, Mass.
Page, James Goddard, IV,	25 Westbourne Street, Roslindale, Mass.
Parlan, Francisco, VI,	Manila, P. I.
Perkins, Francis Hudson, I,	310 Vinton Street, Melrose Highlands, Mass.
Perlmutter, Barney Harold, IV,	30 Mallon Road, Dorchester, Mass.
Potter, Eben Francis, VI,	Valleyfield, Que.
Potter, Harry Howard, II,	Prospect Street, Moosup, Conn.
Rosene, William Clarence, IV,	Fabyan, Conn.
Rubin, Harold, IV,	22 East 93d Street, New York City.
Ryan, Lawrence Francis, IV,	81 Marion Street, Somerville, Mass.
Schneider, John Joseph, VI,	204 President Street, Passaic, N. J.
Scribner, Charles Standish, IV,	10 Pearl Street, Lawrence, Mass.
Shanahan, James Edward, VI,	212 Market Street, Amsterdam, N. Y.
Spaulding, Laurence Melville, I,	Main Street, Ashland, N. H.
Splaine, Francis Edward, II,	Sabattus, Me.
Steele, Everett Vernon, IV,	3 Elm Place, Marblehead, Mass.
Stevens, Harold Wilbur, III,	145 Sanders Avenue, Lowell, Mass.
Stewart, Walter Sweet, VI,	4 Elmwood Avenue, Winchester, Mass.
Sullivan, Paul Francis, I,	250 Rogers Street, Lowell, Mass.
Sweet, Clifford Batcheller, II,	25 South Lenox Street, Worcester, Mass.
Tate, Christopher, I,	20 Dartmouth Street, Malden, Mass.
Toupin, Stephane Frederick, VI,	320 Hildreth Street, Lowell, Mass.
Valentine, Burnet, VI,	62 Rutland Road, Brooklyn, N. Y.
Waite, Lawrence Albert,	26 Colburn Street, North Attleborough, Mass.
Walker, Raymond Scott, II,	32 Walker Street, Lowell, Mass.
Washburn, Elliott Rhodes, IV,	165 Greene Street, Hudson, N. Y.
Wentworth, Walter Emil, VI,	95 High Street, Saco, Me.
Wheaton, Walter Francis, VI,	152 May Street, Worcester, Mass.
White, Thomas Francis, VI,	91 Wachusett Street, Boston, Mass.
Whittier, Roger Knapp, I,	118 Upland Road, Waban, Mass.
Wilcox, Leonard Edward, VI,	38 Plymouth Street, Lowell, Mass.
Williamson, Douglas Franklin, VI,	Blue Mountain, Ala.
Wilmot, William Earl, IV,	Prospect Avenue, Wickford, R. I.

UNCLASSIFIED STUDENTS.

Berquest, Hugh Gerard, II,	259 Massachusetts Avenue, Arlington, Mass.
Berry, Nicholas Luther, II,	Waterville, Me.
Billings, Rupert Francis, IV,	71 Fourth Street, Lowell, Mass.
Chase, Abbott, II,	94 Summer Street, Andover, Mass.
Cockroft, Harold Arthur, II,	7 Trent Street, Woonsocket, R. I.
Code, Allan Leslie, II,	Harriott Street, Perth, Ont.
Connolly, Walter, II,	17 Regent Circle, Brookline, Mass.
Everett, Charles Arthur, IV,	199 Oakland Avenue, Methuen, Mass.
Farley, Mortimer Thayer, III,	Central Avenue, Weston, Mass.
Fuller, Allen Reed, IV,	14 Merlin Street, Dorchester, Mass.
Fuller, Clifford Justis, III,	Gleasondale, Mass.
Greff, Charles Alfred, II,	37 West 88th Street, New York City.
Hadley, Roger Conant, II,	Billerica, Mass.
Hegeman, Joseph Coles, II,	115 Nesmith Street, Lowell, Mass.
Leathem, John Conn, I,	1117 Linden Avenue, Memphis, Tenn.
Liu, Wei-ming, I,	Tien-tsin, China.
Priest, George Herbert, IV,	37 Irving Street, Cambridge, Mass.
Stern, Harold Samuel, I,	Hotel Kenmore, Lockport, N. Y.
Stevens, Ames, III,	Tewksbury, Mass.
Stott, G. Phillip, II,	218 Hanover Street, Portsmouth, N. H.
Vogel, James Parker, II,	Tuxedo Park, N. Y.

SPECIAL STUDENTS.

Beavis, Joseph Francis, III,	42 McKinley Street, Maynard, Mass.
Belanger, Alfred, III,	57 Union Street, Brunswick, Me.
Cinquars, Robert Edward, III,	18 Eustis Avenue, Lowell, Mass.
Clarke, George Dean, III,	534 Main Street, Worcester, Mass.
Cooney, James Edward, III,	5 Handy Street, Providence, R. I.
Cunningham, Alan, III,	241 Canton Avenue, Milton, Mass.
Gignac, Eugene Joseph, III,	38 River Street, Franklin, N. H.
Gorski, Boleslaw, VI,	34 Elmwood Avenue, Lowell, Mass.
Hager, Hazen Otis, III,	138 Glenwood Avenue, Portland, Me.
Haley, Clarence, III,	20 Roberts Street, Sanford, Me.
Hargraves, Arthur Franklin, III,	30 East Main Street, Merrimac, Mass.
Hill, Margaret E., III,	South Billerica, Mass.
Hirst, Fred William, III,	516 Fairmont Street, Woonsocket, R. I.
Hoffman, Richard Robert, III,	51 Davis Street, Plymouth, Mass.
Janson, Arthur Xavier, III,	36 Central Street, Haverhill, Mass.
Johns, Samuel Hazelworth, III,	189 Hunnewell Street, Needham, Mass.
Lovejoy, Herbert William, III,	124 Salem Street, Lawrence, Mass.
McKay, Arthur James, III,	324 Lake Street, Nashua, N. H.
McQuesten, John Theodore, IV,	118 D Street, Lowell, Mass.
Murphy, Edward Francis, III,	488 Fairmount Street, Fitchburg, Mass.
Nelson, Roy Clayton, III,	29 Maple Street, Maynard, Mass.
O'Brian, Charles Miller, III,	323 West High Street, Piqua, Ohio.
Queen, Maude A., III,	Tyngsborough, Mass.
Rice, Max, III,	316 Brown Avenue, Bolton, S. C.
Salvail, Ernest Isidore, III,	875½ Main Street, Worcester, Mass.
Southern, John Joseph, III,	106 Circular Avenue, Pittsfield, Mass.
Villmaire, Charles, III,	21 Clifford Street, Winooski, Vt.
West, Richard Edward,	272 Merrimack Street, Lowell, Mass.
Whelton, George Bernard, VI,	177 Mount Vernon Street, Lowell, Mass.

ALPHABETICAL LIST OF GRADUATES.

[For graduates arranged according to classes see page 103.]

The following list has been corrected in accordance with information received previous to March 1, 1920. Any information regarding incorrect or missing addresses is earnestly solicited.

B.T.C. indicates the degree of Bachelor of Textile Chemistry; B.T.D. indicates the degree of Bachelor of Textile Dyeing; B.T.E. indicates the degree of Bachelor of Textile Engineering; D indicates a diploma; C indicates a certificate (covering a partial course only).

- Abbot, Edward Moseley, II, '04 (D). Vice-President and Agent, Abbot Worsted Company, and Manufacturer, Park Worsted Mills, Graniteville, Mass.
- Abbott, George Richard, II, '08 (D). Andover, Mass.
- Adams, Floyd Willington, VI, '16 (B.T.E.). Mechanical Engineer, The Barrett Company, 17 Battery Place, New York City.
- Adams, Henry Shaw, I, '05 (D). Treasurer and Secretary, The Springstein Mills, and Eureka Cotton Mills, Chester, S. C.
- Adams, Tracy Addison, IV, '11 (D). Division Superintendent, Arnold Print Works, North Adams, Mass.
- Albrecht, Charles Henry, IV, '17 (B.T.C.). Chemist, Wood Worsted Mills, Lawrence, Mass.
- Almquist, George John Edwin, I., '19 (D). Investigator, Brighton Mills, Passaic, N. J.
- Anderson, Arthur Julius, IV, '19 (B.T.C.). With Waldrich Bleachery, Delawanna, N. J.
- Arienti, Peter Joseph, IV, '10 (D). Chief Chemist, Sayles Bleacheries and Glenlyon Dye Works, Saylesville, R. I.
- Arundale, Henry Barnes, II, '07 (D). With United States Conditioning and Testing Company, 340 Hudson Street, New York City.
- Avery, Charles Henry, II, '06 (D). Died January, 1913.
- Bailey, Joseph W., I, '99 (D). Agent, Butler Mill, New Bedford, Mass.
- Bailey, Walter James, IV, '11 (D). With Bayburn Cleansing Shop, Cambridge, Mass.
- Baker, William John, IV, '16 (D). Guncotton Supervisor, E. I. du Pont de Nemours & Co., City Point, Va.
- Baldwin, Arthur Lincoln, IV, '00 (D). Died December 1, 1919.
- Baldwin, Frederick Albert, II, '04 (D). Vice-President and Secretary, Walter Blue & Co., Ltd., Sherbrooke, Que.
- Ballard, Horace W. C. S., IV, '03 (D). Died September 28, 1918.
- Barlofsky, Archie, VI, '17 (B.T.E.). Quartermaster's Depot, Cambridge, Mass.
- Barr, I. Walwin, I, '00 (D). Manager, Mill Department, F. U. Stearns & Co., 9 Thomas Street, New York City.
- Bennett, Edward Howard, II, '03 (C). Publisher, American Wool and Cotton Reporter, 530 Atlantic Avenue, Boston, Mass.
- Bennett, Herbert Bowen, II, '13 (D). Mill Agent, Foster & Stewart Company, Inc., Willimantic, Conn.
- Berry, Wilbur French, II, '17 (D). With Davis & Brown Woolen Company, Uxbridge, Mass.
- Bigelow, Prescott Fenno, II, '12 (D). Died October 14, 1918.
- Blaikie, Howard Mills, II, '11 (D). Salesman, American Woolen Company, 225 4th Avenue, New York City.
- Blake, Parker Gould, VI, '14 (D). Sales Manager, Canadian Woolens, Ltd., Peterborough, Ont.
- Bloom, Wilfred Nathaniel, IV, '03 (D). Died August 17, 1918.
- Bodwell, Henry Albert, II, '00 (D). Treasurer and General Manager, Smith & Dove Manufacturing Company, Andover, Mass.
- Boyd, George Andrew, I, '05 (D). Assistant Treasurer, Harmony Mills, 201 Devonshire Street, Boston, Mass.

- Bradford, Roy Hosmer, II, '06 (D).** Superintendent (Flax Mill) Smith & Dove Manufacturing Company, Andover, Mass.
- Bradley, Raymond Frost, VI, '14 (D).** Garage Proprietor, Twin Light Garage Company, 267 East Main Street, Gloucester, Mass.
- Bradley, Richard Henry, V, '01 (C).** Overseer, Wamsutta Manufacturing Company, New Bedford, Mass.
- Brainerd, Arthur Travena, IV, '09 (D).** Manager of Chicago office, H. A. Metz & Co., 317 North Clark Street, Chicago, Ill.
- Brainerd, Carroll Lewis, IV, '19 (B.T.C.).** Assistant Dyer in Fancy Dye House, Waldrick Bleachery, Delaware, N. J.
- Brannen, Leon Vincent, III, '07 (C).** 300 North 40th Street, Philadelphia, Pa.
- Brickett, Chauncy Jackson, II, '00 (D).** Principal, School of Textiles, International Correspondence School, Scranton, Pa.
- Brickett, Raymond Calvin, II, '14 (D).** Overseer, M. T. Stevens & Sons Company (Marland Mills), Andover, Mass.
- Brown, Rollins Goldthwaite, IV, '12 (D).** Superintendent of Cotton Mill, White Mills of New Hampshire, West Peterboro, N. H.
- Buchan, Donald Cameron, II, '01 (D).** Assistant Superintendent, M. T. Stevens & Sons Company, North Andover, Mass.
- Burnham, Frank Erwin, IV, '02 (D).** In charge of Foreign Department of Dyes, Ralph L. Fuller Company, Inc., 81 Fulton Street, New York City.
- Burrage, Katharine C., IIb, '99 (C).** Died May 16, 1914.
- Cameron, Elliott Francis, IV, '11 (D).** Chief Investigation Section, Bureau of War Risk Insurance, United States Treasury Department, Washington, D. C.
- Campbell, Laura Etta, IIb, '00 (C).** Deceased.
- Campbell, Louise Porter, IIb, '03 (C).** 10 Sheffield Road, Winchester, Mass.
- Campbell, Orison Sargent, II, '03 (D).** Superintendent, Canadian Consolidated Felt Company, Ltd., Kitchener, Ont.
- Carr, George Everett, I, '05 (D).** Rate Setting, Columbia Graphophone Manufacturing Company, Bridgeport, Conn.
- Carter, Robert Albion, IV, '02 (D).** Assistant Sales Manager, Philadelphia office, Dyestuff Division, E. I. du Pont de Nemours & Co., 210 North Broad Street, Philadelphia, Pa.
- Cary, Julian Clinton, VI, '10 (D).** Branch Manager, American Mutual Liability Insurance Company, 209 Pearl Street, Hartford, Conn.
- Chamberlin, Frederick Ellery, I, '03 (D).** Overseer of Spinning, Monument Mills, Housatonic, Mass.
- Chandler, Proctor Ralph, IV, '11 (D).** With Index Knitting Company, 394 Newton Street, Waltham, Mass.
- Chisholm, Lester Bury, I, '11 (D).** General Superintendent, Everlastik, Inc., 52 Chauncy Street, Boston, Mass.
- Church, Charles Royal, II, '06 (C).**
- Churchill, Charles Whittier, III, '06 (D).** Treasurer, Churchill Manufacturing Company, Inc., Lowell, Mass.
- Clapp, Frank Austin, II, '04 (D).** Salesman, Dunmore Worsted Company, Inc., 215 4th Avenue, New York City.
- Clark, Earl William, IV, '18 (B.T.C.).** Chemist, National Aniline and Chemical Company, Buffalo, N. Y.
- Clark, Thomas Talbot, II, '10 (D).** Treasurer, Talbot Mills, North Billerica, Mass.
- Cleary, Charles Joseph, II, '13 (D).** Chief, Textile Branch, Material Section, Air Service Engineering Division, McCook Field, Dayton, Ohio.
- Clogston, Raymond B., IV, '04 (D).** Superintendent of Dyeing, Merrimack Manufacturing Company, Lowell, Mass.
- Coan, Charles Bisbee, IV, '12 (D).** Chemist, Royal Hasco Company, 19th Street, Weehawken, N. J.
- Colby, James Tracy, VI, '16 (D).** With F. C. Huyck & Sons, Albany, N. Y.
- Cole, Edward Earle, IV, '06 (D).** Financial Reporter, Bradstreet Company, Haverhill, Mass.
- Cole, James Thomas, II, '05 (D).** Superintendent, Cambridge Industries for Blind, Massachusetts Commission for the Blind, 686 Massachusetts Avenue, Cambridge, Mass.
- Coman, James Groesbeck, I, '07 (D).** General Manager, Tipton Cotton Mills, Covington, Tenn.
- Conant, Harold Wright, I, '09 (D).** Manager, Conant, Houghton & Co., Littleton, Mass.
- Conant, Richard Goldsmith, I, '12 (D).** Salesman, Brighton Mills, Passaic, N. J.
- Conklin, Jennie Grace, IIb, '05 (C).** Commercial Artist, 10 High Street, Boston, Mass.

- Cook, Kenneth Bartlett, I, '13 (D).** Manager, Textile Section, United States Rubber Company, 122 Adams Street, Newark, N. J.
- Cosendai, Edwin Frederick Ernest, IV, '15 (B.T.D.).** Superintendent, Nitro Products Company, Saginaw, Mich.
- Craig, Albert Wood, IV, '07 (D).** With the Pacific Mills, Lawrence, Mass.
- Craig, Clarence Eugene, III, '02 (D).** Farming, Derry, N. H.
- Creese, Guy Talbot, IV, '14 (D).** Chemist, Creese & Cook Company, Danversport, Mass.
- Culver, Ralph Farnsworth, IV, '04 (D).** President, Culver Dye Company, Inc., and with Drake & Co., Turks Head Building, Providence, R. I.
- Cummings, Edward Stanton, VI, '16 (D).** With Massachusetts Cotton Mills, Lowell, Mass.
- Curran, Charles Ernest, III, '02 (C).** Head Designer, Wood Worsted Mills, Lawrence, Mass.
- Currier, Herbert Augustus, I, '06 (D).** New York Manager, Cotton Yarn Department, Wm. Whitman Company, Inc., 25 Madison Avenue, New York City.
- Currier, John Alva, II, '01 (D).** Superintendent, Pentucket Mills (M. T. Stevens & Sons Company), Haverhill, Mass.
- Curtis, Frank Mitchell, I, '06 (D).** Lumber Merchant, Wm. Curtis Sons Company, 30 Eustis Street, Roxbury, Mass.
- Curtis, William Leavitt, II, '05 (C).**
- Cutler, Benjamin Winthrop, Jr., III, '04 (D).**
- Cuttle, James H., II, '99 (D).**
- Dalton, Gregory Smith, IV, '12 (D).** Superintendent Columbus Tire and Rubber Company, Columbus, Ohio.
- Davieau, Alfred Edward, VI, '16 (D).** Assistant Superintendent, United States Conditioning and Testing Company, 220 Ellison Street, Patterson, N. J.
- Davieau, Arthur Napoleon, VI, '13 (D).** Superintendent, F. C. Huyck & Sons (Kenwood Mills, Ltd.), Arnprior, Ont.
- Davis, Alexander Duncan, VI, '14 (B.T.E.).** Supervising Draftsman, Springfield Armory, Springfield, Mass.
- Dearborn, Roy, VI, '13 (D).** Purchasing Agent, Brightwood Manufacturing Company, North Andover, Mass.
- Dearth, Elmer Ellridge, IV, '12 (D).** Secretary and Assistant Treasurer, New Jersey Car-spring and Rubber Company, Jersey City, N. J.
- de Sa, Francisco, VI, '18 (B.T.E.).** Avenue da Graça, Bahia, Brazil.
- Dewey, James French, II, '04 (D).** Superintendent of Woolen Mills, A. G. Dewey Company, Quechee, Vt.
- Dewey, Maurice William, II, '11 (D).** Inspector of Loans, National Life Insurance Company, Montpelier, Vt.
- Dillon, James Henry, III, '05 (D).** Landscape and Architectural Designer, Park and Recreation Department, Boston, Mass.
- Donald, Albert Edward, II, '04 (D).** Agent, Hecla Mill (American Woolen Company), Uxbridge, Mass.
- Dorr, Clinton Lamont, VI, '14 (D).** With Lockwood & Greene, Machinery Department, 245 State Street, Boston, Mass.
- Duval, Joseph Edward, II, '10 (D).** Philadelphia Representative, Punch & Predmore, Inc., 308 Chestnut Street, Philadelphia, Pa.
- Dwight, John Francis, Jr., II, '08 (D).** Market Gardener, Holliston, Mass.
- Echmalian, John Gregory, VI, '16 (B.T.E.).** Employment Manager, Goodyear Cotton Mills, Inc., Killingly, Conn.
- Ehrenfried, Jacob Benjamin, II, '07 (C).** With George Ehrenfried Company, Lewiston, Me.
- Elliot, Gordon Baylies, II, '12 (D).** Industrial Engineer, 2905 Singer Building, New York City.
- Emerson, Frank Warren, II, '03 (D).** Agent, Moosup Mills (American Woolen Company), Moosup, Conn.
- Engstrom, Karl Emil, VI, '12 (D).**
- Evans, Alfred Whitney, III, '03 (D).**
- Evans, William Robinson, III, '03 (D).** Foreman, Durgin Shoe Company, Haverhill, Mass.
- Everett, Charles Arthur, IV, '19 (B.T.C.).** Chemist, North Berwick Company, North Berwick, Me.
- Ewer, Nathaniel Trull, IV, '01 (D).** Chemist, American Dyewood Company, Chester, Pa.

- Fairbanks, Almonte Harrison, II, '09 (D).** Treasurer and General Manager, Middlesex Knitting Company, Wakefield, Mass.
- Farmer, Chester Jefferson, IV, '07 (D).** Professor of Chemistry, Northwestern University Medical School, Chicago, Ill.
- Farnsworth, Harold Vincent, VI, '16 (B.T.E.).** Assistant to Treasurer, Lancaster Mills, 60 Federal Street, Boston, Mass.
- Farr, Leonard Schaefer, II, '08 (D).** Assistant Superintendent, No. 2 Mill, Farr Alpaca Company, Holyoke, Mass.
- Fels, August Benedict, II, '99 (D).** Manufacturer, William Fels, Inc., 148 West 23d Street, New York City.
- Ferguson, Arthur Feiling, I, '03 (D).**
- Ferguson, William Gladstone, III, '09 (D).** Efficiency Department, Ludlow Manufacturing Associates, Ludlow, Mass.
- Finlay, Harry Francis, IV, '10 (D).** With National Aniline and Chemical Company, Buffalo, N. Y.
- Fisher, Russell Todd, VI, '14 (D).** With Marshall Field & Co., New York City.
- Fiske, Starr Hollinger, II, '09 (D).** Superintendent, Cloth Division, D. Goff & Son, Pawtucket, R. I.
- Fitzgerald, John Francis, IV, '18 (B.T.C.)** With E. I. du Pont de Nemours & Co., Wilmington, Del.
- Fleming, Frank Everett, IV, '06 (D).** Assistant Dyer and Finisher, Goodall Worsted Company, Sanford, Me.
- Fletcher, Roland Hartwell, VI, '10 (D).** Engineering Department, Pressed Steel Car Company, Pittsburg, Pa.
- Flynn, Thomas Patrick, IV, '11 (D).** Salesman, E. I. du Pont de Nemours & Co. of Wilmington, Del., 201 Devonshire Street, Boston, Mass.
- Ford, Edgar Robinson, IV, '11 (D).** Finisher, Sayles Finishing Plants, Saylesville, R. I.
- Forsaith, Ralph Allen, VI, '16 (B.T.E.).** Assistant Superintendent, Appleton Company, Lowell, Mass.
- Foster, Boutwell Hyde, VI, '17 (B.T.E.).** Textile Engineer, Textile Section, United States Rubber Company, 122 Adams Street, Newark, N. J.
- Foster, Clifford Eastman, II, '01 (D).** Employment Manager, National Spun Silk Company, New Bedford, Mass.
- Frost, Harold Benjamin, II, '12 (D).** With Shuttleworth Brothers Company, Amsterdam, N. Y.
- Fuller, Allen Reed, IV, '17 (B.T.C.).** Chemist, E. I. du Pont de Nemours & Co., Lodi Dye Works, Lodi, N. J.
- Fuller, George, I, '03 (D).** Associate Editor and Fabric Expert, F. P. Bennett & Co., Inc., 154 Nassau Street, New York City.
- Gadsby, Arthur Norton, II, '13 (D).** Physicist, Bureau of Standards, Washington, D. C.
- Gahm, George Leonard, II, '06 (D).** Superintendent, Yarn Department, Wood Worsted Mills, Lawrence, Mass.
- Gainey, Francis William, IV, '11 (D).** Color Chemist, National Aniline and Chemical Company, Buffalo, N. Y.
- Gale, Harry Laburton, III, '10 (D).** Manager, Fancy Goods Department, Wilmerding & Bissett, 170 Fifth Avenue, New York City.
- Gay, Olin Dow, II, '08 (D).** Superintendent, Gay Brothers Company, Cavendish, Vt.
- Gerrish, Henry Kilborn, III, '16 (D).** Head Time Study Man, Cheney Brothers, South Manchester, Conn.
- Gerrish, Walter, III, '03 (D).** With American Felt Company, Hyde Park, Mass.
- Gillon, Sara Agnes, IIb, '06 (C).** 26 Hanks Street, Lowell, Mass.
- Goldberg, George, VI, '10 (D).** Draftsman, Watertown Arsenal, Watertown, Mass.
- Goodhue, Amy Helen, IIb, '00 (C).** See Harrison, Mrs. Arthur.
- Gooding, Francis Earle, IV, '19 (B.T.C.)** Technical Man and Salesman, Hooker Electro Chemical Company, 25 Pine Street, New York City.
- Gould, Norman Culver, VI, '19 (B.T.E.).** Textile Engineer, F. C. Huyck & Sons, Albany, N. Y.
- Gyzander, Arne Kolthoff, IV, '09 (D).** Instructor in Dyeing, Lowell Textile School, Lowell, Mass.
- Hadley, Walter Eastman, IV, '08 (D).** Chemist, The Clark Thread Company, Newark, N. J.
- Halsell, Elam Ryan, I, '04 (C).**

- Hardy, Philip Lewis, VI, '10 (D).** Contractor, Andover, Mass.
- Harmon, Charles Francis, I, '99 (D).** 86 Kingsland Avenue, Elmhurst, L. I.
- Harrington, Thomas, IV, '15 (D).** Assistant to General Manager, Northeastern Leather Company, Salem, Mass.
- Harris, Charles Edward, I, '05 (D).** Owner and Manager, Harris Wheel Company, East-hampton, Mass.
- Harris, George Simmons, I, '02 (C).** Superintendent, Lanett Cotton Mills, and Agent, Lanett Bleachery and Dye Works, Lanett, Ala.
- Harrison, Mrs. Arthur (Goodhue, Amy Helen), IIb, '00 (C).** Dracut, Mass.
- Hart, Arthur Norman, IV, '19 (B.T.C.).** In charge of Benzoic Acid Plant and assist-ant plant research, Robert Gilchrist & Co., Elizabethport, N. J.
- Haskell, Spencer Howard, II, '07 (D).** 56 Grove Street, Worcester, Mass.
- Haskell, Walter Frank, IV, '02 (D).** Head of Dyeing Department, Dana Warp Mills, West-brook, Me.
- Hassett, Paul Joseph, IV, '12 (D).** Assistant Superintendent, Bridgeport Works, Reming-ton Typewriter Company, Bridgeport, Conn.
- Hathorn, George Wilmer, IV, '07 (D).** Chemist, Lawrence Gas Company, Lawrence, Mass.
- Hay, Ernest Crawford, II, '11 (D).** Superintendent, Monomac Spinning Company, Law-rence, Mass.
- Hendrickson, Walter Alexander, II, '11 (D).** With Wiley, Bickford, Sweet Company, 60 King Street, Worcester, Mass.
- Hennigan, Arthur Joseph, II, '06 (D).** New England Representative, Cox & Schreiber, of New York, 31 Bedford Street, Boston, Mass.
- Hildreth, Harold William, II, '07 (D).**
- Hintze, Thomas Forsyth, I, '06 (C).** Chief Engineer, Hyco Fuel Products Corporation, 120 Liberty Street, New York City.
- Holden, Francis Crawford, IV, '09 (D).** Chemist and Dyer, Chelsea Fiber Mills, 1155 Manhattan Avenue, Brooklyn, N. Y.
- Holgate, Benjamin, III, '02 (C).** Head of Planning and Schedule Department, Boott Mills, Lowell, Mass.
- Hollings, James Louis, I, '05 (D).** Buyer and Converter (Cotton Goods), W. R. Grace & Co., 7 Hanover Square, New York City.
- Holmes, Otis Milton, VI, '13 (B.T.E.).** Draftsman, United Shoe Machinery Company, Beverly, Mass.
- Hood, Leslie Newton, IV, '12 (D).** Chemist, United States Finishing Company, Providence, R. I.
- Hook, Russell Weeks, IV, '05 (D).** Chemist, Arthur D. Little, Inc., 30 Charles River Road, Cambridge, Mass.
- Horsfall, George Gordon, II, '04 (C).** Assistant Dyer, Interwoven Mills, Inc., Martinsburg, W. Va.
- Horton, Chester Temple, VI, '14 (B.T.E.).** Wilmington, Mass.
- Howarth, Charles Lincoln, IV, '17 (B.T.C.).** Chemist, Sayles Bleacheries and Glenlyon Dye Works, Saylesville, R. I.
- Howe, Woodbury Kendall, I, '10 (D).** Assistant Superintendent, Merrimack Manufac-turing Company, Lowell, Mass.
- Hoyt, Charles William Henry, IV, '07 (D).**
- Hubbard, Ralph King, IV, '11 (D).** Superintendent, L. W. Packard & Co., Ashland, N. H.
- Huising, Geronimo Huerva, I, '08 (D).** Farmer, San José Estate and Mindoro Company, San José, Mindoro, P. I.
- Hunt, Chester Lansing, III, '05 (C).** With Waltham Watch Company, Waltham, Mass.
- Hunton, John Horace, II, '11 (D).** Treasurer and General Manager, Newichawanick Company, South Berwick, Me.
- Hurtado, Leopoldo, Jr., VI, '10 (D).** General Manager, Hurtado & Co., Uruapan, Mich-oacán, Mex.
- Hutton, Clarence, III, '03 (C).** Editor, "Textile World Journal," 144 Congress Street, Boston, Mass.
- Irvine, James Andrew, VI, '17 (B.T.E.).** Manager, Textile Machinery Department, Rod-ney Hunt Machine Company, Orange, Mass.
- Jelleme, William Oscar, I, '10 (D).** Technical Superintendent, Brighton Mills, Passaic, N. J.
- Jenckes, Leland Aldrich, VI, '08 (D).** Deceased.

- Johnson, Arthur Kimball, IV, '13 (D)** (B.S. 1917, Massachusetts Institute of Technology). Instructor in Chemistry, Lowell Textile School, Lowell, Mass.
- Jones, Everett Amos, III, '05 (D)**. Superintendent and Secretary, Nye & Wait Kilmarnock Corporation, Auburn, N. Y.
- Jury, Alfred Elmer, IV, '04 (D)**. Director, Textile Section, United States Rubber Company, 1790 Broadway, New York City.
- Kay, Harry Pearson, II, '09 (D)**. With Richard L. Wallace & Co., 120 Chestnut Street, Philadelphia, Pa.
- Kent, Clarence LeBaron, III, '06 (C)**. Salesman, Standard Oil Company, North Andover, Mass.
- Keough, Wesley Lincoln, II, '10 (D)**. Y. M. C. A., Lowell, Mass.
- Kingsbury, Percy Fox, IV, '01 (D)**. Assistant Manager, Passaic Print Works, Passaic, N. J.
- Knowland, Daniel Power, IV, '07 (D)**. Chemist, Geigy Company, 89 Barclay Street, New York City.
- Lakeman, Fannie Shillaber, IIIb, '00 (C)**. 67 Colchester Street, Brookline, Mass.
- Lamb, Arthur Franklin, II, '10 (D)**. In business, cleansing and dyeing, 297 Main Street, Rockland, Me.
- Lamont, Robert Laurence, II, '12 (D)**. Representative, Mercury Manufacturing Company of Chicago, Ill., 10 High Street, Boston, Mass.
- Lamprey, Leslie Balch, IV, '16 (B.T.D.)**. 173 Parker Street, Lawrence, Mass.
- Lamson, George Francis, I, '00 (D)**. With Ludlow Manufacturing Associates, Ludlow, Mass.
- Lane, John William, I, '06 (C)**.
- Lane, Oliver Fellows, IV, '15 (B.T.D.)**. Chemist, National Coated Paper Corporation, Pawtucket, R. I.
- Laughlin, James Knowlton, III, '09 (D)**. 6313 Sherman Street, Germantown, Philadelphia, Pa.
- Leach, John Pelopidas, I, '00 (C)**. Farming, Mosby Hall Farm, Littleton, N. C.
- Lee, William Henry, II, '05 (C)**. Treasurer, Lee's Wool Shop, Smith Building, Holyoke, Mass.
- Leitch, Harold Watson, IV, '14 (B.T.D.)**. Chemist, The Brightwood Manufacturing Company, North Andover, Mass.
- Levi, Alfred Sandel, IV, '09 (D)**. Assistant Superintendent, Liondale Bleach, Dye and Print Works, Rockaway, N. J.
- Lewis, LeRoy Clark, IV, '08 (D)**. Raw Silk Inspector, Wilkes-Barre Silk Company, Pater-son, N. J.
- Lewis, Walter Scott, IV, '05 (D)**. Development Expert Textile Department, War Plans Division, War Department, Headquarters, Camp Gordon, Atlanta, Ga.
- Lillis, Marvin Hale, IV, '14 (D)**. Dyer, Brightwood Manufacturing Company, North Andover, Mass.
- Lucey, Edmund Ambrose, II, '04 (D)**. Consulting Engineer, Atha and Lucey, 2528 Park Row Building, New York City, and 1400 Widener Building, Philadelphia, Pa.
- McCool, Frank Leslie, IV, '10 (D)**. Dye Salesman, S. R. David & Co., Inc., 100 Purchase Street, Boston, Mass.
- Macdonald, Hector Graham, IV, '19 (B.T.C.)**. Lowell, Mass.
- McDonnell, William Henry, I, '06 (C)**. Lawyer, McDonnell, Drew & White, 40 Court Street, Boston, Mass.
- McGowan, Frank Robert, VI, '15 (B.T.E.)**. Associate Physicist, Bureau of Standards, Washington, D. C.
- Mackay, Stewart, III, '07 (D)**. Instructor, Design Department, Lowell Textile School, Lowell, Mass.
- McKenna, Hugh Francis, IV, '05 (D)**. Western Manager, Chicago Branch, United Indigo and Chemical Company, Ltd., 218 West Kinzie Street, Chicago, Ill.
- MacPherson, Wallace Angus, III, '04 (D)**. Designer, Wuskanut Mills (S. Slater & Sons, Inc.), Farnumville, Mass.
- Malley, Howard Twisden, II, '08 (D)**. Assistant Superintendent, Worsted Department, Pacific Mills, Lawrence, Mass.
- Manning, Frederick David, IV, '10 (D)**. Industrial Engineer, H. L. Gantt, 2905 Singer Building, New York City.

- Marinel, Walter Newton, I, '01 (D).** Auto Mechanic, George C. Moore Wool Scouring Mills, North Chelmsford, Mass.
- Martin, Harry Warren, IV, '11 (D).** Supervisor, Hoad Rubber Company, Watertown, Mass.
- Mason, Archibald Lee, VI, '09 (D).**
- Mather, Harold Thomas, VI, '13 (D).** Draftsman, General Electric Company, West Lynn, Mass.
- Matthews, Elmer Clark, II, '17 (D).** With Swansdown Knitting Company, West Sand Lake, N. Y.
- Mauersberger, Herbert Richard Carl, III, '18 (D).** Designer, Louis Walther Manufacturing Company, Torresdale and N Streets, Philadelphia, Pa.
- Meadows, William Ransom, I, '04 (D).** Cotton Technologist, Bureau of Markets, Department of Agriculture, Washington, D. C.
- Meek, Lotta, IIb, '07 (C).** See Parker, Mrs. Herbert L.
- Merchant, Edith Clara, IIb, '00 (C).** Supervisor of Drawing, Tewksbury-Dracut District; home address, 268 Westford Street, Lowell, Mass.
- Merrill, Allan Blanchard, IV, '11 (D).** Chemist, B. F. Goodrich Company, Akron, Ohio.
- Merrill, Gilbert Roscoe, VI, '19 (B.T.E.)** Instructor, Cotton Yarns, Lowell Textile School, Lowell, Mass.
- Merriman, Earl Cushing, II, '07 (D).** Died Sept. 30, 1918.
- Midwood, Arnold Joseph, IV, '05 (D).** Salesman, I. Levinstein & Co., 281 Franklin Street, Boston, Mass.
- Minge, Jackson C., I, '01 (C).**
- Mirsky, Leon Robert, II, '19 (D).** 62 Locke Street, Nashua, N. H.
- Molloy, Francis Henry, II, '16 (D).** Assistant Designer, Assabet Mill (American Woolen Company), Maynard, Mass.
- Moore, Everett Byron, I, '05 (D).** Vice-President and Manager, Chadbourne & Moore, Inc., Chelsea, Mass.
- Moore, Karl Remick, IV, '11 (D).** Chemist, Julius Kayser, Inc., 232 Taaffe Place, Brooklyn, N. Y.
- Moorhouse, William Roy, IV, '01 (D).** Chemist, National Aniline and Chemical Company, Inc., 113 High Street, Boston, Mass.
- Morrill, Howard Andrew, VI, '16 (D).**
- Morrison, Fred Clifton, I, '03 (D).** Died August 21, 1919.
- Mullen, Arthur Thomas, II, '09 (D).** Designer, Sutton's Mill, North Andover, Mass.
- Munroe, Sydney Philip, I, '12 (D).** Consulting Textile Engineer, R. E. Loper, 100 Purchase Street, Fall River, Mass.
- Murray, James, IV, '13 (D).** With Pawtucket Glazed Paper Company, Pawtucket, R. I.
- Murray, James Andrew, II, '10 (D).** Clerk, Talbot Clothing Company, 403 Washington Street, Boston, Mass.
- Najar, G. George, IV, '03 (D).** Overseer of Dyeing, Monument Mills, Housatonic, Mass.
- Newall, John Douglas, IV, '09 (D).** Department Superintendent, Sayles Bleacheries, Saylesville, R. I.
- Newcomb, Guy Houghton, IV, '06 (C).** Assistant Manager, E. I. du Pont de Nemours & Co., 1055 McCormick Building, Chicago, Ill.
- Neyman, Julius Ellis, IV, '15 (B.T.D.).** Chemist, United States Worsted Company, North Chelmsford, Mass.
- Nichols, Raymond Elmore, VI, '10 (D).** Superintendent, Lowell Bleachery, 7710 South Polk Street, St. Louis, Mo.
- Niven, Robert Scott, VI, '12 (D).** Draftsman, General Electric Company, Lynn, Mass.
- O'Brien, Philip Francis, II, '15 (D).** Cost Accountant, Frederick Bond Cherrington and Associates, 79 Milk Street, Boston, Mass.
- O'Connell, Clarence Edward, IV, '11 (D).** Second Hand, Boston Manufacturing Company, Waltham, Mass.
- O'Connor, Lawrence Dennis, VI, '17 (D).** Machinist, Fore River Shipbuilding Company, Quincy, Mass.
- O'Donnell, John Delaney, I, '04 (C).**
- O'Hara, William Francis, IV, '04 (C).**
- Palais, Samuel, IV, '18 (B.T.C.).** Textile Chemist, Quartermaster's Department, United States Army, Boston, Mass.
- Parker, B. Moore, I, '01 (D).** Died December 11, 1918.

- Parker, Everett Nichols, I, '05 (D).** President, Parker Spool and Bobbin Company, 27-53 Middle Street, Lewiston, Me.
- Parker, Harry Carmi, III, '00 (C).** 100 Boylston Street, Boston, Mass.
- Parker, Mrs. Herbert L. (Meek, Lotta L.), IIb, '07 (C).** 4 Brookside Circle, Auburn, Me.
- Parks, William Lawton, I, '09 (D).** Investigator, Cheney Brothers, South Manchester, Conn.
- Peabody, Roger Merrill, II, '16 (D).** With S. Slater & Sons Company, Webster, Mass.
- Pearson, Alfred Henry, IV, '11 (D).** Salesman, Dunker & Perkins Company, 287 Atlantic Avenue, Boston, Mass.
- Pease, Chester Chapin, I, '09 (D).** Superintendent, Columbian Manufacturing Company, Greenville, N. H.
- Peck, Carroll Wilmot, IV, '13 (D).** With Ritter Textile Company, 41 Market Street, Amsterdam, N. Y.
- Pensel, George Robert, IV, '13 (B.T.D.).** Chemist, Ritter Textile Company, 41 Market Street, Amsterdam, N. Y.
- Perkins, John Edward, III, '00 (D).** Superintendent, S. N. & C. Russell Manufacturing Company, Pittsfield, Mass.
- Perkins, Joshua Dean, III, '08 (D).** Overseer, Amoskeag Manufacturing Company, Manchester, N. H.
- Pertman, Samuel, IV, '17 (B.T.C.).** Dyestuff Chemist, E. I. du Pont de Nemours & Co., Wilmington, Del.
- Petty, George Edward, I, '03 (C).** Textile Inspector, Quartermaster's Corps, United States Army, Greensboro, N. C.
- Pillsbury, Ray Charles, I, '13 (D).** Superintendent of Weaving, Cheney Brothers, South Manchester, Conn.
- Plaisted, Webster, II, '18 (D).** With American Woolen Company, Rochdale, Mass.
- Plummer, Elliott Barton, IV, '13 (D).** Died Jan. 14, 1919.
- Potter, Carl Howard, I, '09 (D).** Superintendent, Brighton Mills, Allwood, N. J.
- Pottinger, James Gilbert, II, '12 (D).** New England Agent, S. Slater & Sons, Inc., Webster, Mass.
- Pradel, Alois Joseph, III, '00 (D).** Designer, Montrose Worsted Company, Woonsocket, R. I.
- Pradel, Mrs. Alois J. (Walker, Anna G.), IIb, '03 (C).** 534 South Main Street, Woonsocket, R. I.
- Prescott, Walker Flanders, IV, '09 (D).** Chemical Sales Department, Sherwin-Williams Company, 897 Centre Street, Montreal, Can.
- Prince, Sylvanus Cushing, VI, '08 (D).**
- Proctor, Braman, IV, '08 (D).** Dyestuff Salesman, Kuttroff, Pickhardt & Co., Inc., 86 Federal Street, Boston, Mass.
- Putnam, George Ives, IV, '16 (B.T.D.).** Chief Textile Chemist, Mohawk Valley Cap Factory, 203 Park Avenue, Utica, N. Y.; also Consulting Chemist, Utica Laboratories, Utica, N. Y.
- Putnam, Leverett Nelson, IV, '10 (D).** Overseer of Dyeing, Arlington Mills, Lawrence, Mass.
- Putnam, Philip Clayton, IV, '13 (D).** Dyer, Sayles Finishing Plants, Saylesville, R. I.
- Ramsdell, Theodore Ellis, I, '02 (D).** Agent, Monument Mills, Housatonic, Mass.
- Rasche, William August, III, '03 (D).** Deceased.
- Raymond, Charles Abel, IV, '07 (D).** Assistant Superintendent, New England Fuel and Transportation Company, Everett, Mass.
- Reed, Norman Bagnell, I, '10 (D).** Assistant to Agent, Lawrence Manufacturing Company, Lowell, Mass.
- Reynolds, Fred Bartlett, II, '08 (D).** Purchasing Agent, M. T. Stevens & Sons Company, North Andover, Mass.
- Reynolds, Isabel Halliday, III, '03 (C).** Clerk, Pacific Mills Print Works, Lawrence, Mass.
- Rich, Edward, IV, '15 (B.T.D.).** 401 Manchester Street, Manchester, N. H.
- Rich, Everett Blaine, III, '11 (D).** Managing Director, C. H. Greenleaf Company, Hotel Vendome, Boston, Mass., and Manager, Profile House, White Mountains, N. H.
- Richardson, George Oliver, IV, '16 (B.T.D.).** Chemist, National Aniline and Chemical Company, Shanghai, China.
- Richardson, Richardson Perry, I, '13 (D).** With Stark Mills, Manchester, N. H.
- Riggs, Homer Chase, VI, '17 (B.T.E.).** Mechanical Engineer, Mason Manufacturing Company, 71 Fulton Street, New York City.

- Ripley, George Keyes, II, '17 (D). Assistant Superintendent, Troy Blanket Mills, Troy, N. H.
- Roberson, Pat Howell, I, '05 (C). Merchant, James R. Roberson & Sons, Cropwell, Ala.
- Roberts, Carrie Isabel, IIIB, '05 (C). Craft Work, 50 Mount Vernon Street, Lowell, Mass.
- Robinson, Ernest Warren, IV, '08 (D). Superintendent, Belding Brothers & Co., Rockville, Conn.
- Robinson, William Carleton, III, '03 (C). With American Wool and Cotton Reporter, 530 Atlantic Avenue, Boston, Mass.
- Robson, Frederick William Charles, IV, '10 (D).
- Roche, Raymond Vincent, IV, '12 (D). With National Aniline and Chemical Company, East 83d Street and Ditmas Avenue, Brooklyn, N. Y.
- Rundlett, Arnold Dearborn, VI, '12 (D). With Albany Felt Company, Albany, N. Y.
- Sanborn, Frank Morrison, VI, '19 (B.T.E.). With American Net and Twine Company, West Kennebunk, Me.
- Sanborn, Ralph Lyford, VI, '16 (B.T.E.). Development Engineer, Firestone Tire and Rubber Company, Akron, Ohio.
- Saunders, Harold Fairbairn, IV, '09 (D). General Manager, Frank Hemingway, Inc., Bound Brook, N. J.
- Sawyer, Joseph Warren, IV, '15 (B.T.D.). Chemist, Calco Chemical Company, Bound Brook, N. J.
- Shaber, Hyman Jesse, VI, '17 (B.T.E.). Engineer, Robinson & Robinson, 64 Central Street, Lowell, Mass.
- Shea, Francis James, II, '12 (D). 14 Clifford Avenue, Ware, Mass.
- Sidebottom, Leon William, IV, '11 (D). Chemist, Essex Aniline Works, Inc., 39 Oliver Street, Boston, Mass.
- Sjostrom, Carl Gustaf Verner, Jr., III, '17 (D). With Paton Manufacturing Company, Sherbrooke, Que.
- Sleeper, Robert Reid, IV, '00 (D). With National Aniline and Chemical Company, Buffalo, N. Y.
- Smith, Albert Adams, I, '99 (D). Deceased.
- Smith, Doane White, II, '10 (D). Superintendent, Marline Mills, Ludlow Manufacturing Associates, Ludlow, Mass.
- Smith, Ralston Fox, I, '04 (C). Manager and Secretary, The Cleveland Battery and Electric Company, 1974 East 66th Street, Cleveland, Ohio.
- Smith, Stephen Eaton, I, '00 (D). Head of Cotton Yarn Department, Lowell Textile School, Lowell, Mass.
- Smith, Theophilus Gilman, Jr., IV, '10 (D). Farming, Groton, Mass.
- Snelling, Fred Newman, II, '03 (D). With the American Express Company, Haverhill, Mass.
- Sokolsky, Henry, VI, '17 (B.T.E.). 1513 Dyre Street, Philadelphia, Pa.
- Spiegel, Edward, II, '03 (C). Theatrical Business, New York City.
- Standish, John Carver, IV, '11 (D). Superintendent, F. C. Huyck & Sons, Albany, N. Y.
- Stevens, Dexter, I, '04 (D). General Manager, Esmond Mills, Esmond, R. I.
- Stevens, Raymond Russell, IV, '19 (B.T.C.). Assistant Dyer, The Felters Company, Millbury, Mass.
- Stevenson, Murray Reid, III, '03 (C). Farming, Princeton Depot, Mass.
- Stewart, Arthur Andrew, II, '00 (D). Head of Finishing Department, Lowell Textile School, Lowell, Mass.
- Stewart, Walter Lawrence, III, '03 (D). Cotton Goods Converter, Charles Kohlman & Co., Inc., 40 Thomas Street, New York City.
- Stiegler, Harold Winfred, IV, '18 (B.T.C.). Student, Massachusetts Institute of Technology, Cambridge, Mass.
- Stohn, Alexander Charles, III, '06 (C). Factory Superintendent, C. Stohn, Hyde Park, Mass.
- Stone, Ira Aaron, IV, '09 (D). President and General Manager, American Waste Company, Inc., 10 High Street, Boston, Mass.
- Storer, Francis Everett, II, '07 (D). Cashier, Windham County National Bank, Danielson, Conn.
- Stronach, Irving Nichols, IV, '10 (D). Divisional Superintendent, Renfrew Manufacturing Company, Adams, Mass.
- Stursberg, Paul William, II, '07 (D). Died in 1913.
- Sturtevant, Albert William, IV, '17 (D). Assistant Superintendent, William Hughes & Co., Inc., Glendale, L. I.

- Sullivan, John David, VI, '12 (D).** With Haverhill Box Board Company, Bradford, Mass.
- Sunbury, Herbert Ellsworth, VI, '18 (B.T.E.).** With General Asbestos and Rubber Company, North Charleston, S. C.
- Sutton, Leslie Emans, I, '17 (D).** Assistant Superintendent, Samson Cordage Works, Boston, Mass.
- Swan, Guy Carleton, II, '06 (D).** Chemist, E. I. du Pont de Nemours & Co., Wilmington, Del.
- Swift, Edward Spooner, S.J., I, '02 (D).** Clergyman, Woodstock College, Woodstock, Md.
- Sylvain, Charles Emile, VI, '13 (D).** With International Machinery Company of 104 Pearl Street, New York City, at Rua Sao Bento, 30, Rio de Janeiro, Brazil.
- Syme, James Francis, II, '00 (D).** General Manager, D. Goff & Sons, Pawtucket, R. I.
- Thaxter, Joseph Blake, Jr., II, '12 (D).** Salesman, Smith & Dove Manufacturing Company, Andover, Mass.
- Thomas, Roland Vincent, I, '05 (C).**
- Thompson, Everett Leander, I, '05 (D).** Salesman, C. F. Hathaway & Sons, Roxbury, Mass.
- Thompson, Henry James, IV, '00 (D).** Dyer, Boston Rubber Shoe Company, Factory No. 1, Malden, Mass.
- Tilton, Elliott Thorp, II, '99 (D).** Died January, 1917.
- Toovey, Sidney Ernest, II, '04 (C).** Assistant Manager, S. S. Learnard Company, 50 Faneuil Hall Market, Boston, Mass.
- Toshach, Reginald Alexander, II, '11 (D).** Assistant Superintendent, M. T. Stevens & Sons Company (Pentucket Mills), Haverhill, Mass.
- Tyler, Lauriston Whitcombe, II, '16 (D).** Salesman, Crimmins & Pierce Company, 281 Summer Street, Boston, Mass.
- Varnum, Arthur Clayton, II, '06 (D).** Superintendent, Hamilton Woolen Company, Southbridge, Mass.
- Walen, Ernest Dean, VI, '14 (B.T.E.).** Manager, Textile Research Company, 34 Battery-march Street, Boston, Mass.
- Walker, Alfred Schuyler, II, '11 (D).** Overseer, Essex Mills (American Felt Company), Picton, N. J.
- Walker, Anna Gertrude, IIb, '03 (C).** See Pradel, Mrs. Alois J.
- Warren, Philip Hamilton, II, '05 (D).** 136 Woodland Street, Worcester, Mass.
- Watson, William, III, '11 (D).** Real Estate Broker, Frank E. Watson, 25 Washington Square, Haverhill, Mass.
- Webb, Frank Herbert, IV, '04 (D).** Died March 20, 1919.
- Webber, Arthur Hammond, IV, '01 (D).** Chemist, Melville Color Company, 96 High Street, Boston, Mass.
- Weinz, William Elliot, IV, '08 (D).** Rhode Island and Connecticut Representative, Essex Aniline Works, Inc., 88 Broad Street, Boston, Mass.
- Whelock, Stanley Herbert, II, '05 (D).** Superintendent and Assistant Treasurer, Stanley Woolen Company, Uxbridge, Mass.
- Whitcomb, Roscoe Myron, IV, '10 (D).** Pharmacist, R. M. Whitcomb & Co., Ashland, N. H.
- White, Royal Phillip, II, '04 (D).** Agent, Stirling Mills, Lowell, Mass.
- Whitehill, Warren Hall, IV, '12 (D).** Chemist, Brightwood Manufacturing Company, North Andover, Mass.
- Wightman, William Henry, IV, '06 (D).** Salesman, Aniline Dyes and Chemicals, Inc., 93 Broad Street, Boston, Mass.
- Wilson, John Sigmund, II, '03 (D).** Deceased.
- Wilson, Walter Ernest Hudson, I, '04 (C).** Deceased.
- Wing, Charles True, III, '02 (D).** Designer, Merrimack Woolen Corporation, Dracut, Mass.
- Wingate, William Henry, IV, '08 (D).** Printing Foreman, Sidney Blumenthal & Co., Shelton, Conn.
- Wise, Paul Tower, II, '01 (D).** Vice-President and General Manager, Chelsea Fiber Mills, 1155 Manhattan Avenue, Brooklyn, N. Y.
- Woo, Tsunkwei, VI, '19 (B.T.E.).** Head of Textile Department, Wah Chang Trading Corporation, Shanghai, China.
- Wood, Ernest Hadley, S.B., IV, '11 (D).** Biological Chemist, Wesley Memorial Hospital, Chicago, Ill.

- Wood, Herbert Charles, I, '06 (D).** Assistant Superintendent, Union Wadding Company, Pawtucket, R. I.
- Wood, James Carleton, IV, '09 (D).** Chemist and Fabric Expert (Auto Tire Division), Brunswick, Balke, Collender Company, Muskegon, Mich.
- Wood, Lawrence Burnham, IV, '17 (B.T.C.).** Chemist, Plant C, Sayles Finishing Plants, Phillipsdale, R. I.
- Woodcock, Eugene Close, II, '07 (D).** Manufacturing Superintendent, Chelsea Fiber Mills, 1155 Manhattan Avenue, Brooklyn, N. Y.
- Woodies, Ida Alberta, IIb, '00 (C).** Reconstruction Aid, Medical Department, Military Hospital No. 3, Colonia, N. J.
- Woodman, Harry Lincoln, I, '02 (C).** Mechanical Engineer, Saco-Lowell Shops, Lowell, Mass.
- Woodruff, Charles Beauregard, I, '06 (C).** Secretary and Buyer, Sharp & Co., Inc., Birmingham, Ala.
- Wright, Edward, II, '05 (C).** Assistant Engineer, Department of Health, 141 State House, Boston, Mass.
- Yavner, Harry, II, '12 (D).** With Middlebrook Wool Combing Company, Somerville, Mass.

GRADUATES ARRANGED BY CLASSES.

[For alphabetical list of alumni and addresses see page 92; deceased graduates are indicated by a star (*).]

1899.

- Bailey, Joseph W., I (D).
 *Burrage, Katherine C., IIIb (C).
 Cuttle, James H., II (D).
 Fels, August B., II (D).
 Harmon, Charles F., I (D).
 *Smith, Albert A., I (D).
 *Tilton, Elliott T., II (D).

1900.

- *Baldwin, Arthur L., IV (D).
 Barr, I. Walwin, I (D).
 Bodwell, Henry A., II (D).
 Brickett, Chauncey J., II (D).
 *Burrage, Katherine C. (postgraduate), IIIb (C).
 *Campbell, Laura E., IIIb (C).
 Harrison, Mrs. Arthur, IIIb (C).
 Lakeman, Fannie S., IIIb (C).
 Lamson, George F., I (D).
 Leach, John P., I (C).
 Merchant, Edith C., IIIb (C).
 Parker, Harry C., III (C).
 Perkins, John E., III (D).
 Pradel, Alois J., III (D).
 Sleeper, Robert R., IV (D).
 Smith, Stephen E., I (D).
 Stewart, Arthur A., II (D).
 Syme, James F., II (D).
 Thompson, Henry J., IV (D).
 Woodies, Ida A., IIIb (C).

1901.

- Bradley, Richard H., V (C).
 Buchan, Donald C., II (D).
 Currier, John A., II (D).
 Ewer, Nathaniel T., IV (D).
 Foster, Clifford E., II (D).
 Harrison, Mrs. Arthur (postgraduate), IIIb (C).
 Kingsbury, Percey F., IV (D).
 Marinel, Walter N., I (D).
 Minge, Jackson C., I (C).
 Moorhouse, Wm. R., IV (D).
 *Parker, B. Moore, I (D).
 Webber, Arthur H., IV (D).
 Wise, Paul T., II (D).
 Woodies, Ida A. (postgraduate), IIIb (C).

1902.

- Burnham, Frank E., IV (D).
 Carter, Robert A., IV (D).
 Craig, Clarence E., III (D).
 Curran, Charles E., III (C).
 Ferguson, Arthur F., I (C).
 Harris, George S., I (C).
 Haskell, Walter F., IV (D).
 Holgate, Benj., III (C).
 Ramsdell, Theodore E., I (D).
 Swift, Edward S., I (D).
 Wing, Charles T., III (D).
 Woodman, Harry L., I (C).

1903.

- Bennett, Edward H., II (C).
 Bloom, Wilfred N., IV (D).
 Campbell, Louise P., IIIb (C).
 Campbell, Orison S., II (D).
 Chamberlin, Frederick E., I (D).
 Emerson, Frank W., II (D).
 Evans, Alfred W., III (D).
 Evans, Wm. R., III (D).
 Ferguson, Arthur F., I (D).
 Fuller, George, I (D).
 Gerrish, Walter, III (D).
 Holgate, Benj., III (C).
 Hutton, Clarence, III (C).
 *Morrison, Fred C., I (D).
 Najjar, G. George, IV (D).
 Petty, George E., I (C).
 Pradel, Mrs. Alois J., IIIb (C).
 *Rasche, Wm. A., III (D).
 Reynolds, Isabel H., III (C).
 Robinson, Wm. C., III (C).
 Snelling, Fred N., II (D).
 Spiegel, Edward, II (C).
 Stevenson, Murray R., III (C).
 Stewart, Walter L., III (D).
 *Wilson, John S., II (D).

1904.

- Abbot, Edward M., II (D).
 Baldwin, Frederick A., II (D).
 Clapp, F. Austin, II (D).
 Clogston, Raymond B., IV (D).
 Culver, Ralph F., IV (D).
 Cutler, Benj. W., Jr., III (D).

Dewey, James F., II (D).
 Donald, Albert E., II (D).
 Halsell, Elam R., I (C).
 Horsfall, George G., II (C).
 Jones, Everett A., III (C).
 Jury, Alfred E., IV (D).
 Lucey, Edmund A., II (D).
 MacPherson, Wallace A., III (D).
 Meadows, Wm. R., I (D).
 O'Donnell, John D., I (C).
 O'Hara, Wm. F., IV (C).
 Parker, Everett N., I (C).
 Smith, Ralston F., I (C).
 Stevens, Dexter, I (D).
 Toovey, Sidney E., II (C).
 *Webb, Frank H., IV (D).
 White, Royal P., II (D).
 *Wilson, Walter E. H., I (C).

1905.

Adams, Henry S., I (D).
 Arundale, Henry B., II (C).
 Boyd, George A., I (D).
 Carr, George E., I (D).
 Cole, James T., II (D).
 Conklin, Jennie G., IIIb (C).
 Curtis, Wm. L., II (C).
 Dillon, James H., III (D).
 Harris, Charles E., I (D).
 Hollings, James L., I (D).
 Hook, Russell W., IV (D).
 Hunt, Chester L., III (C).
 Jones, Everett A., III (D).
 Lee, Wm. H., II (C).
 Lewis, Walter S., IV (D).
 McKenna, Hugh F., IV (D).
 Midwood, Arnold J., IV (D).
 Moore, Everett B., I (D).
 Parker, Everett N., I (D).
 Roberson, Pat H., I (C).
 Roberts, Carrie L., IIIb (C).
 Thomas, Roland V., I (C).
 Thompson, Everett L., I (D).
 Warren, Philip H., II (D).
 Wheelock, Stanley H., II (D).
 Wright, Edward, Jr., II (C).

1906.

*Avery, Charles H., II (D).
 Bradford, Roy H., II (D).
 Church, Charles R., II (C).
 Churchill, Charles W., III (D).
 Cole, Edward E., IV (D).
 Currier, Herbert A., I (D).
 Curtis, Frank M., I (D).
 Fleming, Frank E., IV (D).
 Gahm, George L., II (D).
 Gillon, Sara A., IIIb (C).
 Hennigan, Arthur J., II (D).
 Hildreth, Harold W., II (C).
 Hintze, Thomas F., I (C).
 Kent, Clarence L., III (C).

Lane, John W., I (C).
 McDonnell, Wm. H., I (C).
 Newcomb, Guy H., IV (C).
 Reynolds, Isabel H. (postgraduate), III (C).
 Stohn, Alexander C., III (C).
 Swan, Guy C., II (D).
 Varnum, Arthur C., II (D).
 Wightman, Wm. H., IV (D).
 Wood, Herbert C., I (D).
 Woodruff, Charles B., I (C).

1907.

Arundale, Henry B., II (D).
 Brannen, Leon V., III (C).
 Coman, James G., I (D).
 Craig, Albert W., IV (D).
 Ehrenfried, Jacob B., II (C).
 Farmer, Chester J., IV (D).
 Haskell, Spencer H., II (D).
 Hathorn, George W., IV (D).
 Hildreth, Harold W., II (D).
 Hoyt, Charles W. H., IV (D).
 Knowland, Daniel P., IV (D).
 Lane, John W., I (C).
 Mackay, Stewart, III (D).
 *Merriman, Earl C., II (D).
 Parker, Mrs. Herbert L., IIIb (C).
 Raymond, Charles A., IV (D).
 Storer, Francis E., II (D).
 *Stursberg, Paul W., II (D).
 Woodcock, Eugene C., II (D).

1908.

Abbott, George R., II (D).
 *Ballard, Horace W. C. S., IV (D).
 Dwight, John F., Jr., II (D).
 Farr, Leonard S., II (D).
 Gay, Olin D., II (D).
 Hadley, Walter E., IV (D).
 Huising, Geronimo H., I (D).
 *Jenckes, Leland A., VI (D).
 Lewis, LeRoy C., IV (D).
 Mailey, Howard T., II (D).
 Perkins, J. Dean, III (D).
 Prince, Sylvanus C., VI (D).
 Proctor, Braman, IV (D).
 Reynolds, Fred B., II (D).
 Robinson, Ernest W., IV (D).
 Weinz, W. Elliot, IV (D).
 Wingate, Wm. H., IV (D).

1909.

Brainerd, Arthur T., IV (D).
 Conant, Harold W., I (D).
 Fairbanks, Almonte H., II (D).
 Ferguson, Wm. G., III (D).
 Fiske, Starr H., II (D).
 Gyzander, Arne K., IV (D).
 Holden, Francis C., IV (D).
 Kay, Harry P., II (D).
 Laughlin, James K., III (D).
 Levi, Alfred S., IV (D).

Mason, Archibald L., VI (D).
 Mullen, Arthur T., II (D).
 Newall, J. Douglas, IV (D).
 Parkis, Wm. L., I (D).
 Pease, Chester C., I (D).
 Potter, Carl H., I (D).
 Prescott, Walker F., IV (D).
 Saunders, Harold F., IV (D).
 Stone, Ira A., IV (D).
 Wood, J. Carleton, IV (D).

1910.

Arienti, Peter J., IV (D).
 Cary, Julian C., VI (D).
 Clark, Thomas T., II (D).
 Duval, Joseph E., II (D).
 Finlay, Harry E., IV (D).
 Fletcher, Roland H., VI (D).
 Gale, Harry L., III (D).
 Goldberg, George, VI (D).
 Hardy, Philip L., VI (D).
 Howe, Woodbury K., I (D).
 Hurtado, Leopoldo, Jr., VI (D).
 Jelleme, Wm. O., I (D).
 Keough, Wesley L., II (D).
 Lamb, Arthur F., II (D).
 McCool, Frank L., IV (D).
 Manning, Frederick D., IV (D).
 Murray, James A., II (D).
 Nichols, Raymond E., VI (D).
 Putnam, Leverett N., IV (D).
 Reed, Norman B., I (D).
 Robson, Frederick W. C., IV (D).
 Smith, Doane W., II (D).
 Smith, Theophilus G., Jr., IV (D).
 Stronach, Irving N., IV (D).
 Whitcomb, Roscoe M., IV (D).

1911.

Adams, Tracy A., IV (D).
 Bailey, Walter J., IV (D).
 Blaikie, Howard M., II (D).
 Cameron, Elliott F., IV (D).
 Chandler, Proctor R., IV (D).
 Chisholm, Lester B., I (D).
 Dewey, Maurice W., II (D).
 Flynn, Thomas P., IV (D).
 Ford, Edgar R., IV (D).
 Gainey, Francis W., IV (D).
 Hay, Ernest C., II (D).
 Hendrickson, Walter A., II (D).
 Hubbard, Ralph K., IV (D).
 Hunton, John H., II (D).
 Martin, Harry W., IV (D).
 Merrill, Allan B., IV (D).
 Moore, Karl R., IV (D).
 O'Connell, Clarence E., IV (D).
 Pearson, Alfred H., IV (D).
 Rich, Everett B., III (D).
 Slidebottom, Leon W., IV (D).
 Standish, John C., IV (D).
 Toshach, Reginald A., II (D).

Walker, Alfred S., II (D).
 Watson, Wm., III (D).
 Wood, Ernest H., IV (D).

1912.

*Bigelow, Prescott F., II (D).
 Brown, Rollins G., IV (D).
 Coan, Charles B., IV (D).
 Conant, Richard G., I (D).
 Dalton, Gregory S., IV (D).
 Dearth, Elmer E., IV (D).
 Elliot, Gordon B., II (D).
 Engstrom, Karl E., VI (D).
 Frost, Harold B., II (D).
 Hassett, Paul J., IV (D).
 Holmes, Otis M., VI (D).
 Hood, Leslie N., IV (D).
 Lamont, Robert L., II (D).
 Leitch, Harold W., IV (D).
 Munroe, Sydney P., I (D).
 Niven, Robert S., VI (D).
 Pottinger, James G., II (D).
 Roche, Raymond V., IV (D).
 Rundlett, Arnold D., VI (D).
 Shea, Francis J., II (D).
 Sullivan, John D., VI (D).
 Thaxter, Joseph B., Jr., II (D).
 Whitehill, Warren H., IV (D).
 Yavner, Harry, II (D).

1913.

Bennett, Herbert B., II (D).
 Cleary, Charles J., II (D).
 Cook, Kenneth B., I (D).
 Davieau, Arthur N., VI (D).
 Davis, Alexander D., VI (D).
 Dearborn, Roy, VI (D).
 Gadsby, Arthur N., II (D).
 Holmes, Otis M., VI (B.T.E.).
 Horton, Chester T., VI (D).
 Johnson, Arthur K., S.B., IV (D).
 Mather, Harold T., VI (D).
 Murray, James, IV (D).
 Peck, Carroll W., IV (D).
 Pensel, George R., IV (B.T.D.).
 Pillsbury, Ray C., I (D).
 *Plummer, Elliott B., IV (D).
 Putnam, Philip C., IV (D).
 Richardson, Richardson P., I (D).
 Sylvain, Charles E., VI (D).
 Walen, Ernest D., VI (D).

1914.

Blake, Parker G., VI (D).
 Bradley, Raymond F., VI (D).
 Brickett, Raymond C., II (D).
 Creese, Guy T., IV (D).
 Davis, Alexander D., VI (B.T.E.).
 Dorr, Clinton L., VI (D).
 Fisher, Russell T., VI (D).
 Horton, Chester T., VI (B.T.E.).
 Leitch, Harold W., IV (B.T.D.).

Lillis, Marvin H., IV (D).
 McGowan, Frank R., VI (D).
 Walen, Ernest D., VI (B.T.E.).

1915.

Cosendai, Edwin F. E., IV (B.T.D.).
 Harrington, Thomas, IV (D).
 Lane, Oliver F., IV (B.T.D.).
 McGowan, Frank R., VI (B.T.E.).
 Neyman, Julius E., IV (B.T.D.).
 O'Brien, Philip F., II (D).
 Rich, Edward, IV (B.T.D.).
 Sawyer, Joseph W., IV (B.T.D.).

1916.

Adams, Floyd W., VI (B.T.E.).
 Baker, Wm. J., IV (D).
 Colby, J. Tracy, VI (D).
 Cummings, Edward S., VI (D).
 Davieau, Alfred E., VI (D).
 Echmalian, John G., VI (B.T.E.).
 Farnsworth, Harold V., VI (B.T.E.).
 Forsaith, Ralph A., VI (B.T.E.).
 Gerrish, Henry K., III (D).
 Lamprey, Leslie B., IV (B.T.D.).
 Molloy, Francis H., II (D).
 Morrill, Howard A., VI (D).
 Peabody, Roger M., II (D).
 Putnam, George I., IV (B.T.D.).
 Richardson, George O., IV (B.T.D.).
 Sanborn, Ralph L., VI (B.T.E.).
 Shaber, Hyman J., VI (D).
 Tyler, Lauriston W., II (D).

1917.

Albrecht, Charles H., IV (B.T.C.).
 Barlofsky, Archie, VI (B.T.E.).
 Berry, Wilbur F., II (D).
 Foster, Boutwell H., VI (B.T.E.).

Fuller, Allen R., IV (B.T.C.).
 Howarth, Charles L., IV (B.T.C.).
 Irvine, James A., VI (B.T.E.).
 Matthews, Elmer C., II (D).
 O'Connor, Lawrence D., VI (D).
 Perlman, Samuel, IV (B.T.C.).
 Riggs, Homer C., VI (B.T.E.).
 Ripley, George K., II (D).
 Shaber, Hyman J., VI (B.T.E.).
 Sjostrom, Carl G. V., Jr., III (D).
 Sokolsky, Henry, VI (B.T.E.).
 Sturtevant, Albert W., IV (D).
 Sutton, Leslie E., I (D).
 Wood, Lawrence B., IV (B.T.C.).

1918.

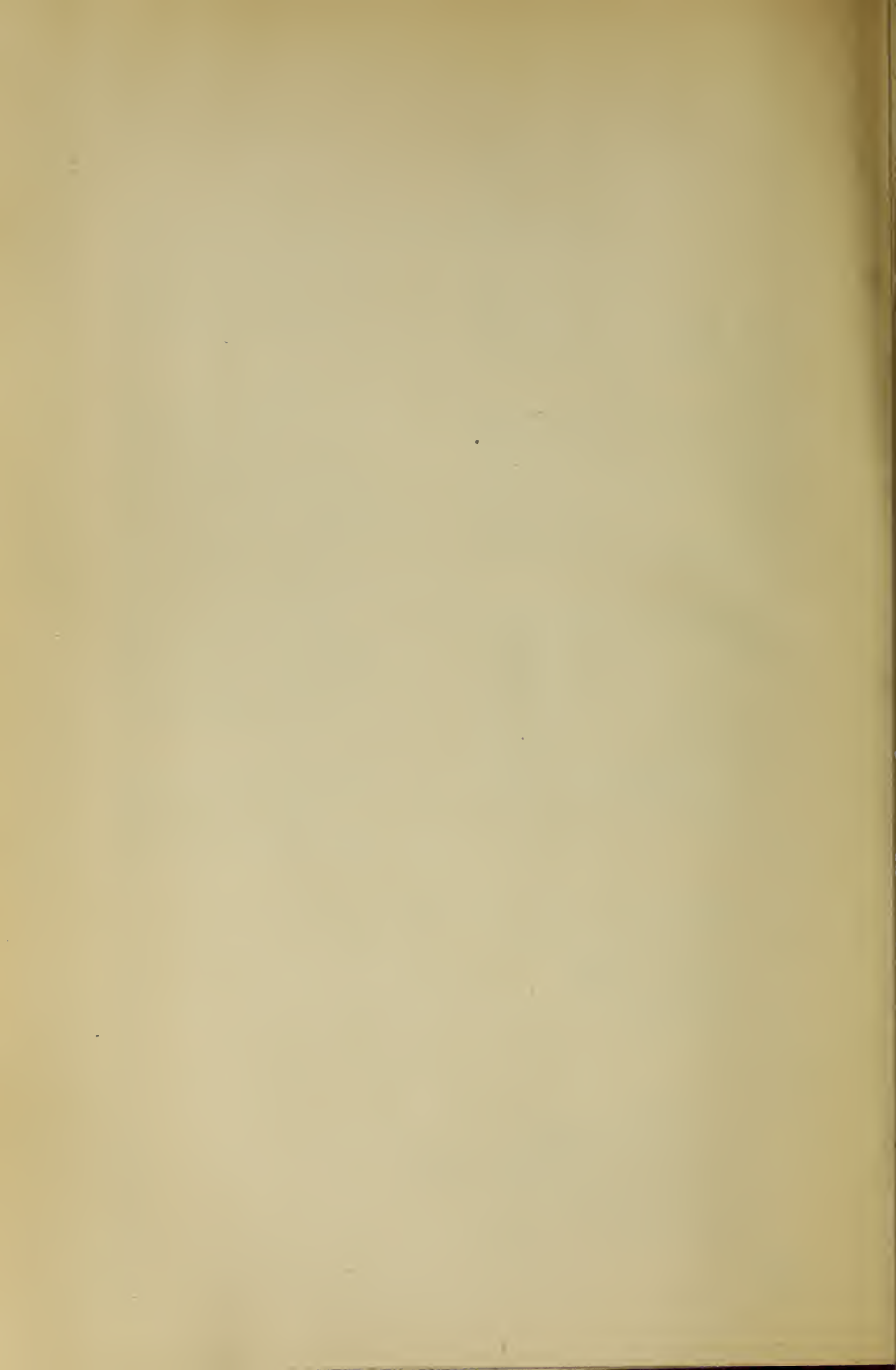
Clark, Earl W., IV (B.T.C.).
 de Sa, Francisco, VI (B.T.E.).
 Fitzgerald, John F., IV (B.T.C.).
 Mauersberger, Herbert R. C., III (D).
 Palais, Samuel, IV (B.T.C.).
 Plaisted, Webster, II (D).
 Stiegler, Harold W., IV (B.T.C.).
 Sunbury, Herbert E., VI (B.T.E.).

1919.

Almquist, George J., I (D).
 Anderson, Arthur J., IV (B.T.C.).
 Brainerd, Carroll L., IV (B.T.C.).
 Everett, Charles A., IV (B.T.C.).
 Gooding, Francis E., IV (B.T.C.).
 Gould, Norman C., VI (B. T. E.).
 Hart, Arthur N., IV (B.T.C.).
 Macdonald, Hector G., IV (B.T.C.).
 Merrill, Gilbert R., VI (B.T.E.).
 Mirsky, Leon R., II (D).
 Sanborn, Frank M., VI (B.T.E.).
 Stevens, Raymond R., VI (B.T.E.).
 Woo, Tsun K., VI (B.T.E.).

INDEX.

	PAGE
Administration,	6
Advanced standing,	11
Alumni Association,	82
Application blanks,	11
Athletics,	81
Attendance,	14
Awards of merit,	14
Board, cost of,	15
Buildings,	65
Bulletins and catalogue,	16
Calendar,	3
Conduct,	15
Courses of instruction,	23
Courses for women,	24
Degree courses,	14
Diploma courses,	14
Entrance examinations,	18
Entrance requirements for day students,	17
Equipment,	65
Examinations,	12
Fees,	11
General committees,	5
General information,	11
Graduate course,	13
Graduates, day class, 1919,	85
Graduates, alphabetical register,	92
Graduates, class register,	103
Instructors,	6-83
Introduction,	9
Library,	15
Lockers,	16
Medal, National Association of Cotton Manufacturers,	14
Object of the school,	9
Officers of administration and instruction,	6
Partial courses,	13
Prizes for chemistry and dyeing,	86
Records and reports of standing,	13
Register of day students,	87
Registration,	11
Residence and expenses,	15
Rooms, cost of,	15
Sessions,	15
Subjects of instruction:—	
Textile Engineering Department,	38
Chemistry and Dyeing Department,	45
Textile Design and Power Weaving Department,	53
Language and History Department,	56
Cotton Yarn Department,	58
Woolen and Worsted Yarn Department,	60
Finishing Department,	61
Thesis,	13
Trustees,	4
Tuition,	11



DAY APPLICATION BLANK

THIS SHOULD BE FILLED OUT AND SENT TO THE PRESIDENT

LOWELL TEXTILE SCHOOL

LOWELL, MASS.

Date,

Name in Full,

Date and Place of Birth,

Home Address, {
City or Town. State.
.....
Street and Number.

Parent or Guardian,

School last attended,

DEGREE COURSES. (Course should be indicated.)

VI. Textile Engineering.

IV. Chemistry and Textile Coloring.

1. General Course.

2. Cotton Option.

3. Wool Option.

DIPLOMA COURSES. (Course should be indicated.)

I. Cotton Manufacturing.

III. Textile Design.

II. Wool Manufacturing.

(General Textile Course.)

Signature,

ENDORSEMENT BY OFFICER OF SCHOOL LAST ATTENDED

I hereby certify that
the above applicant has completed the regular course at the
School in 19.., and has satisfactorily passed the following subjects, as specified
on pages 17-22 of Catalogue of 1920-1921, making a total of points.

REQUIRED SUBJECTS. POINTS.

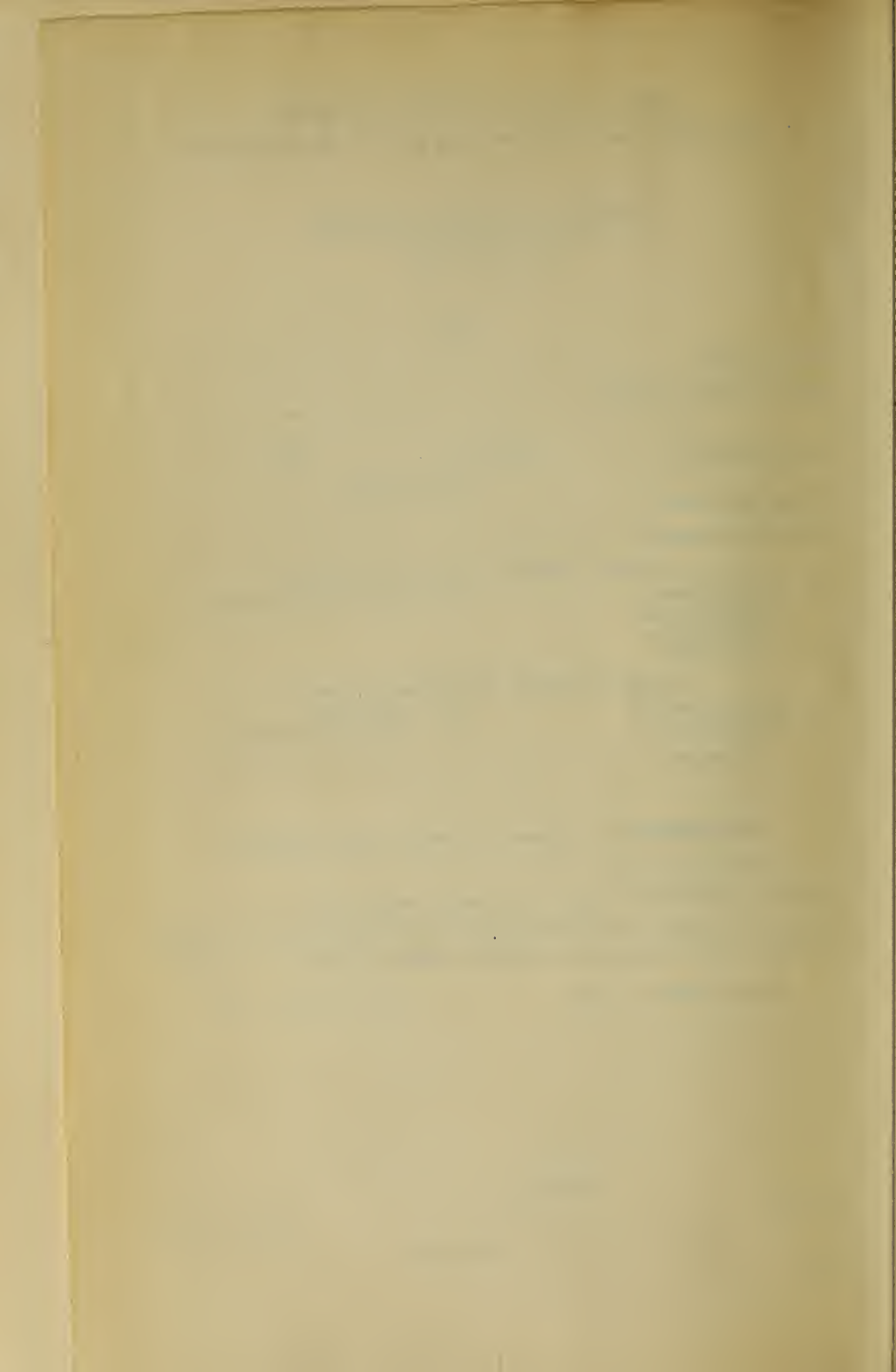
ELECTIVE SUBJECTS. POINTS.

.....
.....
.....
.....
.....

Signed:

Principal, School, located
at State of

Date,



BULLETIN

OF THE

Lowell Textile School

LOWELL, MASS.

Issued Quarterly

1920-1921

Entered August 26, 1902, at Lowell, Mass., as second-class matter
under Act of Congress of July 16, 1894
Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3,
1917, authorized October 21, 1918

Moody Street and Colonial Avenue

BOSTON
WRIGHT & POTTER PRINTING CO., STATE PRINTERS
32 DERNE STREET

1920

AN INVESTIGATION SHOWING THE EFFECT OF TWIST UPON THE STRENGTH AND ELASTICITY OF A COTTON YARN.

This study was made at the Lowell Textile School during the late winter and early spring of 1920 by Mr. Charles H. Forsaith of the class of 1920. The object of the experiment was to determine the relation between the amount of twist in a given strand of cotton and the strength and elasticity of the strand.

The method of solution was as follows: a No. 13 single cotton yarn was spun from strict Middling Upland cotton of about seven-eighths inch staple, using three operations of picking, one of carding, two of drawing, three of roving, spinning the yarn from double roving.

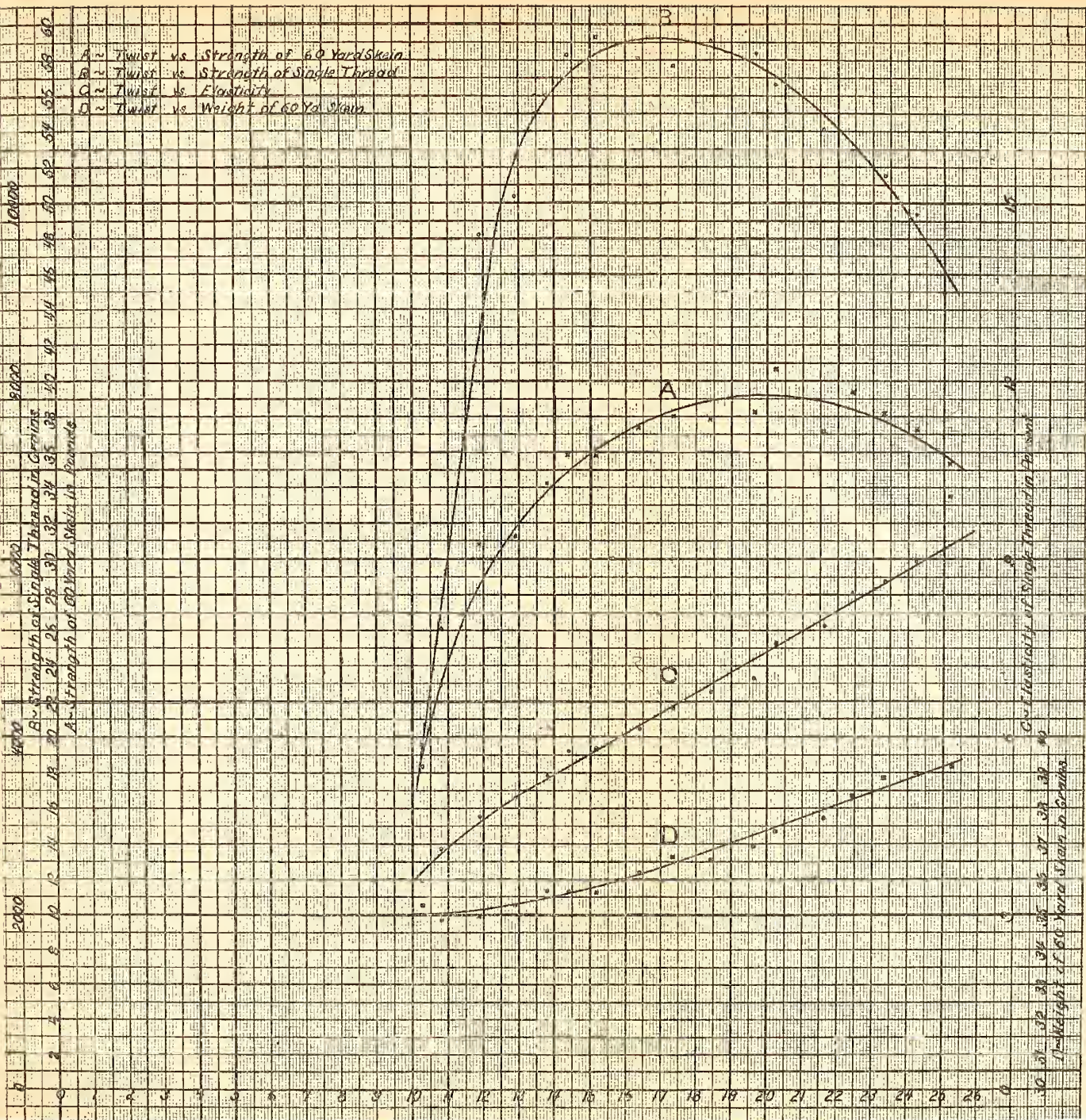
The yarn was spun upon a tape-driven spinning frame, using twist multipliers from 2.75 to 6.75, inclusive, increasing by increments of .25. There were twenty bobbins of yarn spun with each twist multiplier. Both single-thread and skein tests were made upon the yarn, the skein tests being made upon a sixty-yard skein on account of the limitations of the testing machine. The single-thread tests were made upon a Schoepper single-thread testing machine. In making these tests it was recognized that the comparison made was between yarns of different twists, and because the tests covered a period of several days it was necessary to adopt a method of test which would insure, as nearly as possible, a like hygroscopic condition for each kind of twist.

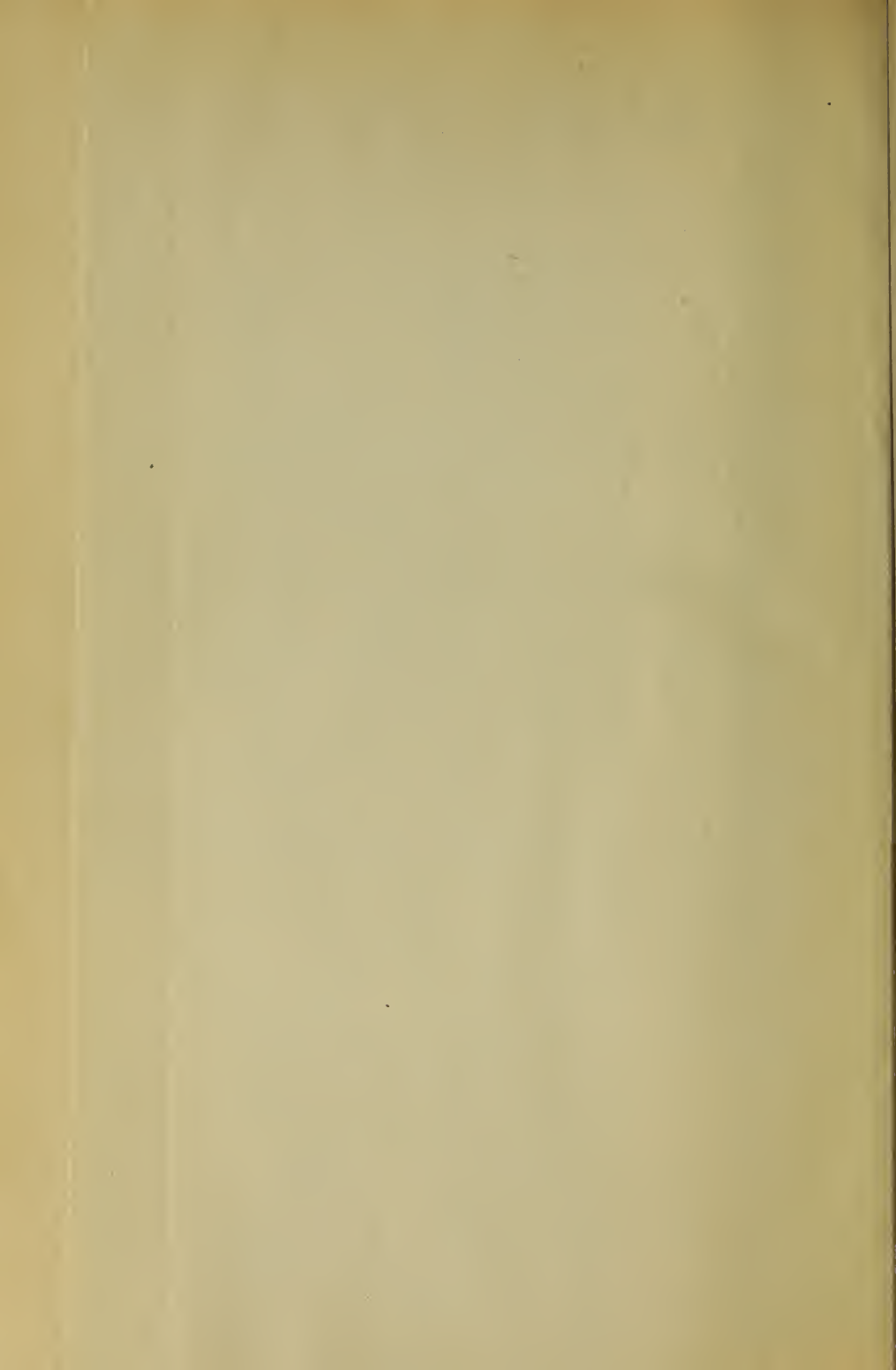
Accordingly, the bobbins to be tested were arranged in a case in seventeen rows with twenty bobbins in a row, and the test was commenced by taking the first bobbin in each row, then the second, and so on through the entire set of three hundred forty bobbins. During all the time that the yarn was being tested, and for several days before, these bobbins were kept together in the same room, so that they all were subjected to the same atmospheric conditions.

As two single-thread tests were made from each bobbin this meant a series of thirty-four single-thread tests of each twist. It took, after a little practice, about twenty minutes to make the tests upon the seventeen bobbins in a series, so that it is not probable that there was any appreciable change in the hygroscopic condition of the yarn during that time. To further prevent errors that would arise from changes in moisture content of the yarn, complete sets of breaks were always made; that is, seventeen bobbins, one of each kind of twist, or a multiple of seventeen bobbins, were broken at each period of testing.

A similar method was adopted in making the skein tests, which consisted of two tests from each bobbin in the series.

The table below shows the twist multiplier used, with the calculated and actual twists per inch found in the yarn. The actual twists were found by examination of six different bobbins in each set.





Twist Table.

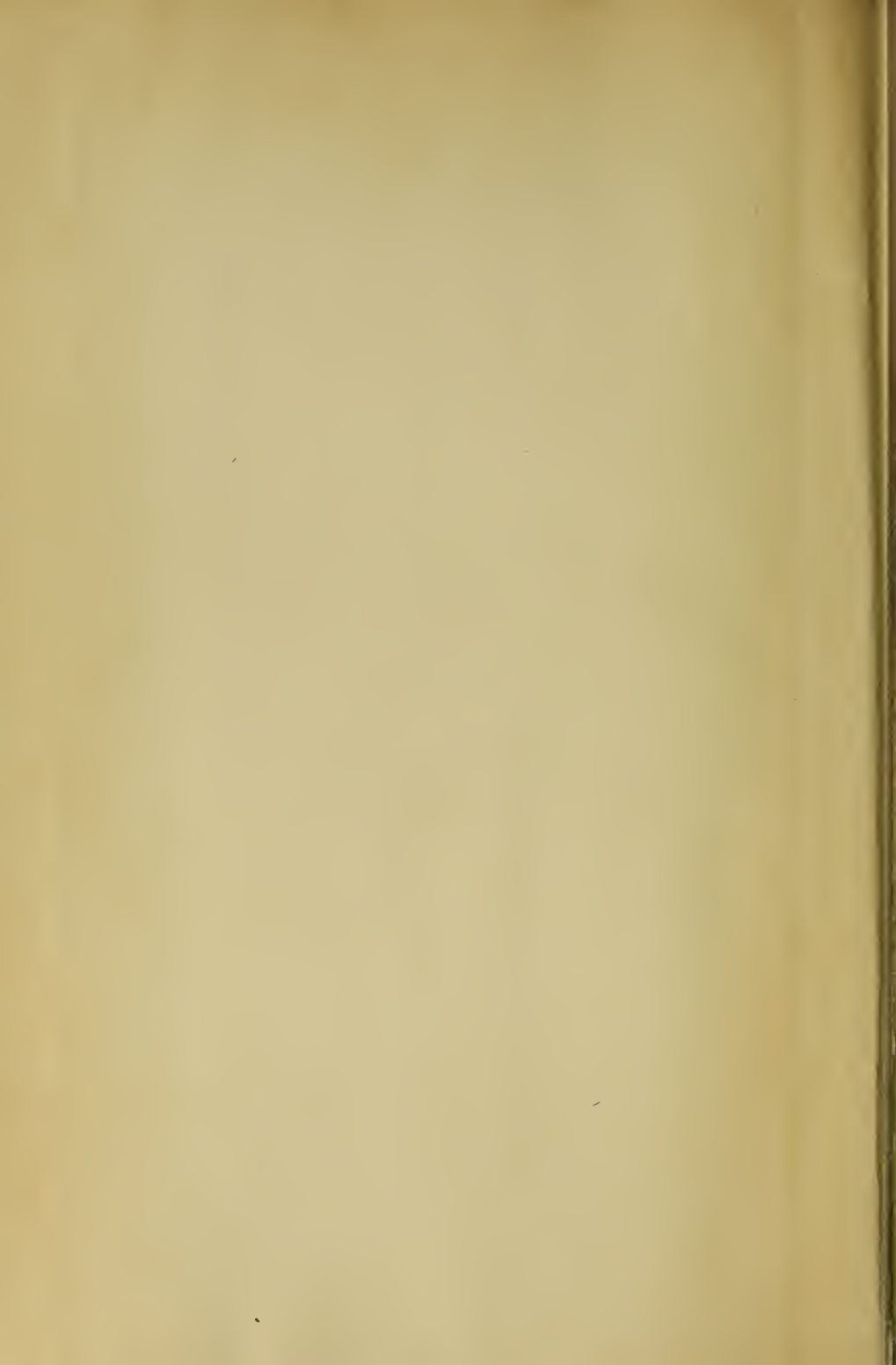
Twist Multiplier.	Calculated Twist.	Actual Twist.	Twist Multiplier.	Calculated Twist.	Actual Twist.
6.75	25.2	27.3	4.50	16.4	15.3
6.50	24.2	25.7	4.25	15.1	14.5
6.25	23.3	23.7	4.00	14.4	14.1
6.00	22.4	23.2	3.75	13.8	13.6
5.75	21.6	21.2	3.50	12.9	12.0
5.50	20.2	20.2	3.25	11.9	12.0
5.25	19.6	19.6	3.00	10.8	10.8
5.00	18.4	18.1	2.75	10.2	9.6
4.75	17.3	17.8			

No attempt was made to correct the increasing contraction produced by the higher twists, as will be seen by an examination of the chart, which shows that the hardest twisted yarn was about 11 per cent heavier than the softest twisted strand. This is shown graphically by the curve D at the bottom of the charted curves.

The curve C, representing the elasticity, was derived from the single-thread tests alone in the following manner. To insure like treatment for these yarns during testing, an initial weight of 57 grams was applied before clamping the strand in the lower jaw of the testing machine. This, of course, put the yarn under some strain, which would stretch it slightly, so that the curve obtained shows only the elasticity found after the application of the 57-gram weight, and does not indicate the entire elasticity in the yarn. It does show, however, that apparently the elasticity of this yarn varies directly with the twist.

Curve A, representing the relation of strength to twist as indicated by skein tests, clearly shows the rapid increase in strength that accompanies an increase in twist up to a point where the twist represents the use of a multiplier of about 4.25 or 4.50. The peak of the curve corresponds to a twist multiplier of 5.50, and from that point on there is a falling off of strength as twist increases.

Curve B at the top of the chart represents the relation of strength to twist as indicated by single-thread tests, and shows not only a rapid increase in strength as the twist increases, but after the peak is passed there is almost as rapid a falling off in strength that accompanies increases in the amount of twist. The peak of the curve appears to come at a point when the amount of twist in the yarn represents the use of a multiplier of 4.25 to 4.50. The difference between the location of the peaks in curves B and A is a point worthy of extended investigation. Indeed, several points for further investigation are apparent from the results obtained from this test. These are now under consideration, and will be taken up in succeeding tests upon other cotton yarns.





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